# THE FINANCIAL BEHAVIOUR OF IMMIGRANTS TO AUSTRALIA

A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy (Economics and Finance)

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# DECLARATION

I , Liliya Gatina, declare that:

**a)** except where due acknowledgement has been made, the work is that of the author alone;

**b)** the work has not been submitted previously, in whole or in part, to qualify for any other academic award;

**c)** the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program;

**d)** Ms Annie Ryan was paid for copyediting and proofreading this work.

Signed Date

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# LIST OF ABBREVIATIONS

| Abbreviation | Meaning |
|---|---|
| 2SLS | Two-Stage Least Squares |
| ABS | Australian Bureau of Statistics |
| DIAC | Department of Immigration and Citizenship (formerly the Department of Immigration and Multicultural Affairs) |
| DIMIA | Department of Immigration and Multicultural and Indigenous Affairs |
| GDP | Gross Domestic Product |
| HILDA | Household, Income and Labour Dynamics in Australia |
| LSIA | Longitudinal Survey of Immigrants to Australia |
| MLE | Maximum Likelihood Estimation |
| MSR | Major Statistical Region |
| NOM | Net Overseas Migration |
| NUMAS | Numerical Multifactor Assessment System |
| SRFRT | Self-Reported Financial Risk-Taking |

## ABSTRACT

As acknowledged by the Minister for Immigration and Citizenship, immigration is a main driver of population growth in Australia, with almost 30 per cent of the increase in population in 2010 brought about by migration (DIAC 2011). Immigrants' contribution to the growth of the Australian workforce in the last five years is even higher, with almost half of this growth attributable to the employment of recent immigrants. This means that the Australian economy is dependent on immigration, and immigrants' financial behaviour can potentially have a huge impact on the Australian financial system and economy.

This thesis investigates the financial behaviour of immigrants, whether and how this behaviour differs from that of native-born Australians, how it is affected by both the immigrants' home-country characteristics such as institutional quality and by Australian immigration policies, and what is its effect on immigrants' well-being. In this research, immigrants are defined as people who migrated across country boundaries to establish a new residence in Australia. The financial behaviour of immigrants is described by two wealth accumulation aspects – their financial risk-taking ability and their saving habits – and by one spending aspect – remittances sent to friends and families overseas.

This research first investigates what affects the financial risk-taking of Australian residents, which is self-assessed by individuals and also measured by their equity investments, and what influence home-country institutions might have on immigrants' participation in Australian financial markets. Second, the research analyses the determinants of the saving rates of Australian households, and the relationship between the saving rates of immigrants and their home countries' characteristics. Third, the research determines the factors that affect whether and how much immigrants remit money abroad, and it examines the effects on remittance outflows from Australia of the Australian immigration reforms of the late 1990s. Finally, the components of the well-being of Australian residents, including if their country of origin is different from Australia, are examined. In line with the primary focus of the thesis, special attention is given to the financial aspect of immigrants' well-being.

Two data sources are used to answer these research questions: the Household, Income and Labour Dynamics in Australia (HILDA) Survey and the Longitudinal Survey of Immigrants to Australia (LSIA). HILDA's sample includes Australians both born in the country and born overseas, enabling comparison between the two groups. A detail questionnaire covering the

financial aspects of Australian households is another distinct feature of this dataset, which allows the analysis of people's tendency to take financial risk and their saving behaviour. The immigrant-only data of LSIA, on the other hand, contains immigrant-specific information such as their remittances and type of entry visa. Both datasets provide different data on immigrants' well-being and complement each other.

Different methodologies are applied to answer the research questions. First, probit models describe an individual's probability of investing in the share market and their probability of remitting . Second, ordered probit models are used for modelling an individual's self-assessed ability to take financial risk and their remitted amount expressed in levels. Third, an immigrant's actual remitted amount is estimated by using a linear panel model. Remittances are then estimated by the two-part model, with the probit model used at the first stage and either the ordered probit model or the linear panel model at the second. Fourth, the remitting decisions of immigrants are also described by the Tobit model and the Heckman two-step model. Finally, a two-stage least squares procedure is employed to analyse the saving behaviour of Australian residents.

The analysis of the financial risk-taking ability of immigrants revealed that both the level of stock market investment and the level of self-reported financial risk-taking are lower for immigrants to Australia than for other Australians. The difference in these risk attitudes can be explained by the institutional environment in the country of origin. Not only do immigrants participate less in financial markets, they also tend to save less than their native-born counterparts. The quality of the institutional environment in the country of origin was found to be positively correlated, and national saving rates negatively correlated, with immigrants' saving rates, although the latter was evident only in the extended sample which included all household members. Immigrants' need to support their families who were not able to join them in Australia can also potentially reduce their funds available for investment in the Australian economy. This research found that the remitting behaviour of immigrants depends not only on their income or wealth but also on other factors such as having family members overseas or their type of entry visa. The visa effect, however, changed after the 1999 immigration reform due to the changed profile of the average independent applicant whose earning potential became higher. Finally, it was found that, despite their improved financial situation, immigrants to Australia are less satisfied with their lives than native-born Australians. The similar levels of income and wealth of these two groups suggest that other factors apart from absolute income increase matter for people's well-being.

Findings from this research could serve as a basis for recommendations for policy reform that would enhance the financial development of Australia. For example, to encourage more active participation of immigrants in the Australian financial markets, it may be beneficial to provide more information about the reliability and efficiency of Australian financial institutions to newly arrived migrants. Similarly, immigration policies which are more lenient towards the immigration of family members of primary applicants for Australian visas, especially their children, could result in lower outward remittances from Australia.

# CHAPTER 1. INTRODUCTION

According to data from the Department of Immigration and Citizenship (formerly the Department of Immigration and Multicultural and Indigenous Affairs), at June 2010 the Australian population was estimated as 22.3 million people, an increase of 377,100 from the previous year (ABS 2011; DIAC 2011). As acknowledged by the Minister for this Department, immigration is a main driver of population growth, with almost 30 per cent of this increase brought about by immigration. This percentage is even higher in the workforce where more than 45 per cent of labour force growth in the last five years was due to the employment of recent immigrants (DIAC 2011). The demographic and economic input of immigrants is encouraged in societies with an ageing population and low fertility rates, such as Australia, whose economies are becoming increasingly dependent on immigration.

This thesis investigates the financial behaviour of immigrants, whether and how it differs from that of native-born Australians, how this behaviour is affected by the immigrants' home-country characteristics such as institutional quality as well as by Australian immigration policies, and how it is related to immigrants' well-being. Immigrants in this research are defined as people who migrated across country boundaries to establish a new residence (Fan 2009). As this definition suggests, only first-generation immigrants are considered and it is assumed that the children and grandchildren of immigrants have assimilated with the local population.

This research may be beneficial to countries with a high concentration of immigrants from different countries, like Australia. It is expected that findings from this thesis can serve as a basis for recommendations for policy reform that would enhance the financial development of Australia.

The principal research questions are:

1. What determines the level of financial risk-taking of Australian residents, and what is the role of home-country institutions in explaining any difference in the propensity to take financial risk between Australian-born and non-Australian-born residents?

2. Does being born overseas, among other factors, affect Australians' personal saving rates, and do immigrants' home-country characteristics influence their saving habits after migration to Australia?

3. What constitutes immigrants' willingness and ability to remit, and what is the effect of Australian Government policies on the outflow of remittances from the country?

4. What determines the well-being of Australian residents, and is it different for Australians born overseas? How is the general well-being of immigrants related to their financial well-being?

This introductory chapter first provides a general background on immigration, its causes and effects, particularly for Australia. Accordingly, Section 1.1 provides a concise review of international migration theories and Section 1.2 presents milestones in the history of migration to Australia and describes its current situation. Section 1.3 describes the main features of the data used in the research. Section 1.4 provides a brief description of the content of the subsequent chapters of the thesis and summarises its findings.

## 1.1 Theories of international migration

International migration has become a basic structural feature of most of the world's developed countries, with the majority of them becoming diverse, multiethnic societies (Massey et al. 1993). Understanding the nature of the forces underlying this phenomenon therefore is crucial for these immigrant-receiving countries. Awareness of the factors conducive to migration can be beneficial in planning immigration policies or government social programs, for example. Likewise, accurate predictions of immigration inflows make it feasible to foresee possible issues associated with population growth.

At present, however, according to Massey et al. (1993), there is no single commonly accepted theoretical framework explaining international migration. Massey et al. group all theoretical approaches to international migration into two categories: approaches explaining the initiation of migration and approaches explaining the perpetuation of such international movements. Theories explaining the initiation of migration include neoclassical economic theory, dual labour market theory, the new economics of labour migration and world systems theory. Network theory, institutional theory and the theory of cumulative causation, on the

other hand, clarify the reasons for transnational population flows continuing to exist across space and time.

Theoretical models providing initiating causes of international migration, as argued by Massey et al. (1993), employ different concepts. For example, the neoclassical economic theory, the oldest theory of migration, focuses on the differences in wages between regions, which, in turn, are caused mainly by the geographic differences in labour demand and labour supply (Jennissen 2007). For example, a country can experience a labour shortage as a result of its economic expansion, a mismatch between labour demand and local labour supply in specific sectors or its ageing population (Fan 2009). According to the neoclassical theory, high wages in countries with a shortage of labour attract labour from countries with a relatively high labour supply, thus initiating migration (Borjas 1989; Jennissen 2007; Massey et al. 1993). Stark and Bloom (1985), on the other hand, in their approach, called the 'new economics of migration', argued that not only labour market conditions but also conditions of other markets affect a decision to become a labour migrant. This decision is no longer made at an individual level but involves other members of household, and remittances received by households are used to minimise risks to family income or to overcome capital constraints on family production activities (Jennissen 2007; Taylor 1999).

The dual labour market theory and the world systems theory were described by Massey et al. (1993) as theories that look beyond these micro-level decision models of individuals or households who maximise their income or minimise their risks. The dual labour market theory sees labour demand from the labour-intensive segments of industrialised immigrant-receiving societies as the main pull factor causing international labour flows. The world systems theory considers interaction between societies such as trade as an incentive for migration. In the conditions produced by trade between weaker and advanced economies, stronger economies drain weaker economies, thus creating the better living conditions which attract immigrants (Amankwaa 1995).

Although some factors such as wage differentials and relative risks may continue to cause people to move, there are also other circumstances that keep migration flows going. Massey et al. (1993) named other causes that arise during the course of migration and become independent themselves, such as the spread of migrant networks, the development of institutions supporting international migration and the alteration of social contexts in ways that cause more migration, a process called cumulative causation. Migrant networks help to

sustain transnational movement by, for example, providing information about education and access to social security or helping to find work and accommodation for potential immigrants of the same ethnic origin (Jennissen 2007). Institutional theory suggests that international migration also facilitates the creation of private institutions and voluntary organisations to fill the gap between the large number of those wishing to enter a developed country and the limited number of visas offered by that country. These organisations, both legal and illegal, as claimed by Massey et al. (1993), receive profit for providing services such as transport, labour contracts, documents and legal advice for migrants. In addition, Massey et al. (1993) listed six socioeconomic factors that are affected by immigration in the cumulative way: the distribution of income, the distribution of land, the organisation of agriculture, culture, the regional distribution of human capital and the social meaning of work. The cumulative effects of income distribution, for instance, are reflected in the increasing urge to migrate after observing the improved financial situation of the families receiving financial support from their members overseas.

The theories outlined above are not entirely contradictory but nevertheless can require different strategies for the formulation of relevant policies. Depending on the preferred model, the policy makers in the destination country might, for example, amend wages or employment conditions, whereas the governments of sending countries might decide to accentuate their economic development. Policy recommendations would also depend on the geographical location and other characteristics of a destination country as well as the objectives of its immigration policy.

Australia is a country with a high population of immigrants, with its immigration policies changing with changes in the global environment as well as the country's needs. For example, to meet labour demand, in April 2005 the government introduced changes to the Working Holiday Maker Program to allow workers who had done a minimum of three months seasonal harvest work in regional Australia to apply for the extension of their visas for another year (Shah & Burke 2005). The focus of permanent immigration is also shifting to meet the needs of the labour market and regional development. Specifically, to ease the population pressure on infrastructure and land, Australian immigration policies encourage immigrants' settlement away from an urban area. An increased emphasis is also placed on skilled immigration to increase Australia's competitiveness in the global marketplace (Walsh 2008).

The next section describes the immigration policies of Australia and, accordingly, the changing profile of its new settlers.

## 1.2 Migration to Australia: past and present

Even though, as stated by Borooah and Mangan (2007), Australia has one of the highest percentage of residents born overseas and one of the highest rates of ethnic diversity, this has not always been the case. A strong preference for white British citizens was the prominent feature of the early Australian immigration programs. The 'White Australia Policy' originated in the 1850s when the governments of Victoria and New South Wales introduced restrictions on Chinese migration in response to white miners' resentment towards Chinese diggers (DIAC 2009a). The formal implementation of the 'White Australia Policy' by the Federal Government in the form of the Immigration Restriction Act in 1901 was welcomed by most of society. Not only did it eliminate non-European immigration but it also imposed additional restrictions on the health, occupation and language of prospective immigrants. According to Borooah and Mangan (2007) and the Department of Immigration and Citizenship (DIAC 2009a), the infamous dictation test was seen as the main policy instrument of the 'White Policy'. This fifty-word test, conducted in any European language generally not known by an applicant and selected by the immigration officer, was applied to all 'aboriginal inhabitants of Africa, Asia and Polynesia' but only to a few 'undesirable' whites. If a person failed the test, he or she was refused entry to Australia or, if the immigrant was already in Australia, he or she was imprisoned for six months before being deported (ABC 2001).

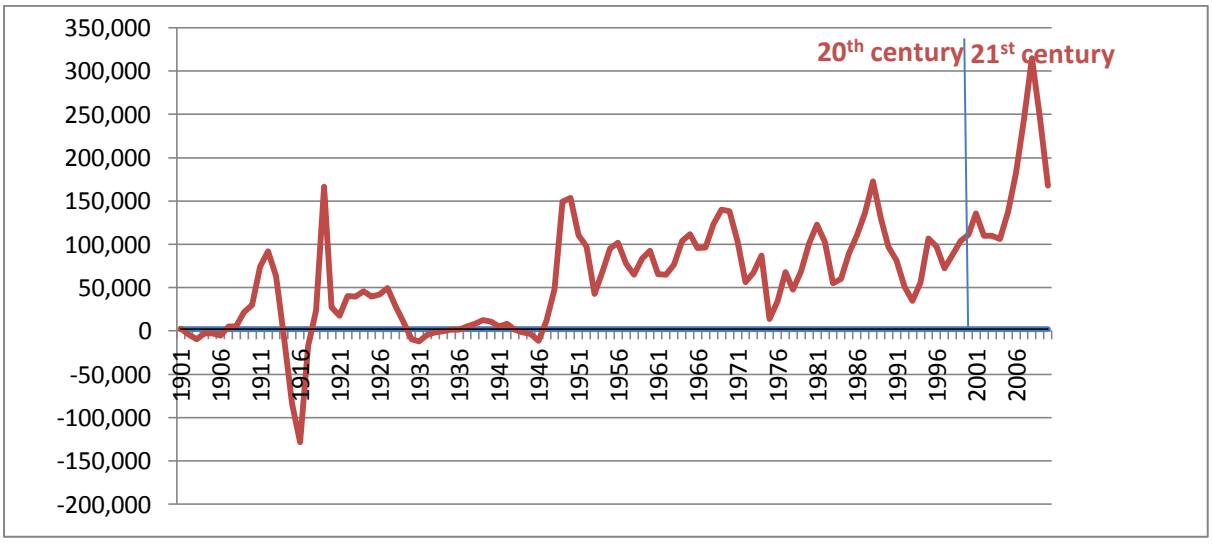
Nevertheless, until 1914, Australia grew rapidly, reaching a population of almost five million, with most settlers arriving from the traditional source – the British Isles (DIMIA 2001). After the virtual cessation of immigration during World War I, it picked up again in the 1920s. The migrants who arrived during this decade were not only from Britain but also Italy and Greece, and majority of them were given the financial assistance with travel expenses by the Australian Government as an incentive to migrate to Australia[1]. The Great Depression of the 1930s brought assisted arrivals to a standstill with Jews from Austria and Germany being the last to receive help with settling in Australia. The Department of Immigration and Citizenship (DIAC) fact sheet (DIAC 2009a) reveals that there were many non-white refugees during

[1] Although initially the financial assistance was offered to encourage migration from certain countries, since April 1981 this assistance has only been given to refugees.

World War II and some of them were allowed to stay, marking the first crack in the discriminatory immigration policy.

The post-war economic boom as well as the feeling of insecurity caused by World War II set the scene for an immigration program to increase the small Australian population, with the assisted passage programs extended to include migrants from the US, Netherlands, Norway, France, Belgium and Denmark. The restrictions on non-European nationals were also slightly eased, allowing non-European businessmen to stay after they had lived continuously in Australia for fifteen years under temporary work permits (DIMIA 2001). As a result, Net Overseas Migration (NOM)[2] in 1950 reached the third highest figure of the 20th century of 153,685 people (the highest and the second highest numbers were 172,794 in 1988 and 166,303 in 1918, respectively). The 20th century low of -128,737 registered in 1916, mostly due to the departure of Australians to serve in World War I, preceded a sharp increase in net migration in 1918, reflecting the return of the soldiers. Figure 1.1 reports NOM to Australia for the 20th century and the subsequent 10 years when the general upward trend in NOM is even more prominent[3].

**Figure 1.1 Net overseas migration from 1901 to 2010 (in persons)**




**Source:** DIMIA(2001) up to 1997 and the Australian Bureau of Statistics (ABS 2012) from 1998.

[2] Net Overseas Migration (NOM) is defined by the Department of Immigration and Multicultural Affairs (DIMIA 2001) as a measure of net addition or loss to Australia's resident population. Under the current method, estimation of final NOM is based on arrivals and departures from Australia for 12 months or more in a 16-month period (DIAC 2011).

[3] In 2008, NOM to Australia reached its absolute maximum of 315,000 people due to an increase in the number of temporary arrivals dominated by international students (DIAC 2012). This increase was followed by a sharp decline as a result of the reforms to the student visa program.

As emigrants from more and more European countries settled in Australia, non-Europeans were first allowed to become Australian citizens in 1957 after fifteen years of residence. This was followed by the revised Migration Act of 1958 that introduced simplified entry permits and abolished the controversial dictation test. However, according to the Department of Immigration and Multicultural and Indigenous Affairs (DIMIA) (2001), non-British immigrants were still subjected to stricter requirements for social service benefits than Australian-born citizens and British migrants, who had equal rights**.** At that time, immigrants from Britain were treated like Australian citizens and were also eligible to vote after residing in Australia for six months (Neumann & Tavan 2009). After a review of the non-European migration policy in March 1966, the requirements for successful applicants for Australian residency were extended to include other criteria apart from race, such as qualifications and ability to settle. In the same year, the required length of residence in Australia for non-Europeans to become permanent residents or citizens was reduced to five years.

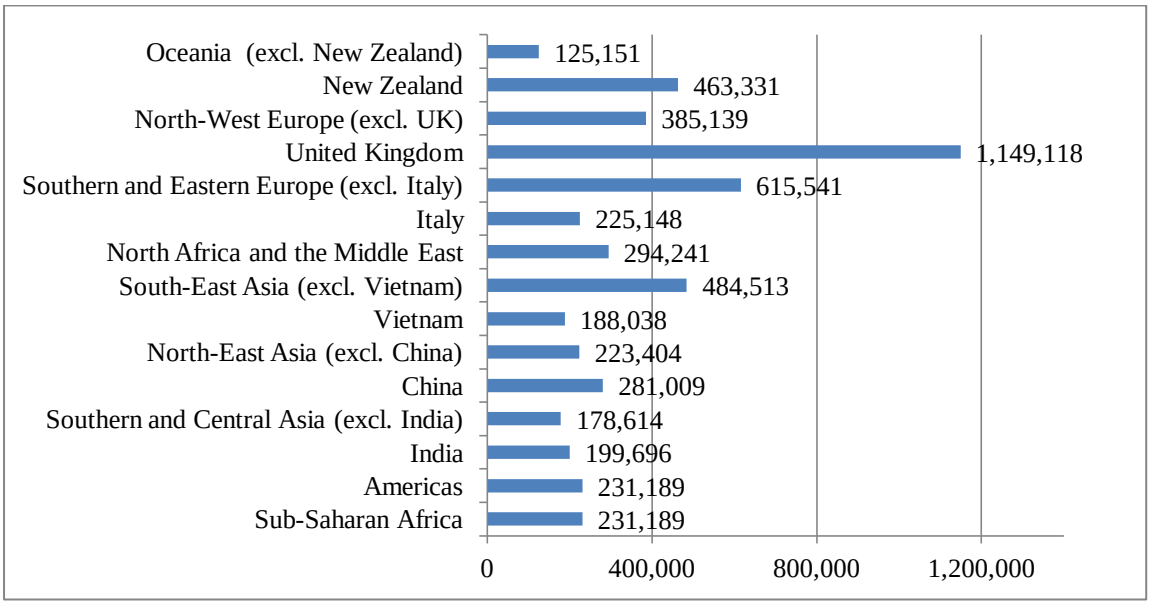
These changes were the beginning of the end of the 'White Australia Policy' with the number of non-European settlers rising annually from 746 in 1966 to 2,696 in 1971 (DIAC 2009a). Yet, as reports from DIAC suggest (DIAC 2009a; DIMIA 2001), subsequent steps taken by the Whitlam Labour Government in 1973 to further eradicate racial discrimination, had little impact due to a reduced overall migration intake in response to the end of a long economic boom. The planned migration intake continued to decrease until the Fraser Government came into power in 1976. Although the size of the migration program was increased to 70,000 (DIMIA 2001), controls on entry requirements were also tightened due to an increased number of illegal immigrants and many visitors overstaying their visitor visas. New extensive immigration policies were developed in 1978 including three-year rolling programs to replace immigration targets and a more consistent approach to migrant selection without racial discrimination.

At around the same time, Asian immigration took off with the arrival of Indo-Chinese refugees from Thailand in 1976. The first refugee boats started to arrive from Vietnam in the same year (Borooah & Mangan 2007; DIMIA 2001). In response to growing numbers of refugees coming from forty countries, in 1977 the government announced new procedures for the assessment and handling of refugee situations. Refugee immigration, including arrivals by boat, continued to increase throughout the 1980s and 1990s and resulted in the development of programs to provide a safer means of escape from life-threatening environments. For example, the Special Humanitarian Program was designed in 1981 for relatives of Australian

residents who were not eligible for migration under existing refugee programs. Similarly, the Orderly Departure Program was developed in 1982 as a legal migration program for the Vietnamese (DIMIA 2001). The termination of assisted passages in 1981 did not apply to refugees.

The policies mentioned above contributed to the current ethnic composition of Australian population, 25 per cent of which in 2007 were born overseas (ABS 2011). Figure 1.2, based on 2008 data collected by the DIAC (2009c) and the Australian Bureau of Statistics (ABS 2011), depicts the ethnic distribution of almost 5.3 million immigrants. Although the immigrant population is still dominated by migrants from Britain (1.15 million) and New Zealand (almost 0.5 million), the composition of immigration changed substantially after the end of the discriminatory migration policies. For example, more than a third of all immigrants currently originate from Asia with most of them being born in China, India and Vietnam. The proportions of the resident population from each of these countries currently amount to 4 to 5 per cent, whereas, as data from DIMIA (2001) shows, until 1990s these percentages did not even reach 1.5 per cent. Likewise, the number of migrants from Sub-Saharan Africa has equalled the number of migrants from the American continents at more than 230,000 people. Among Southern European countries, Italian immigrants represent the biggest group of 225,000 people.

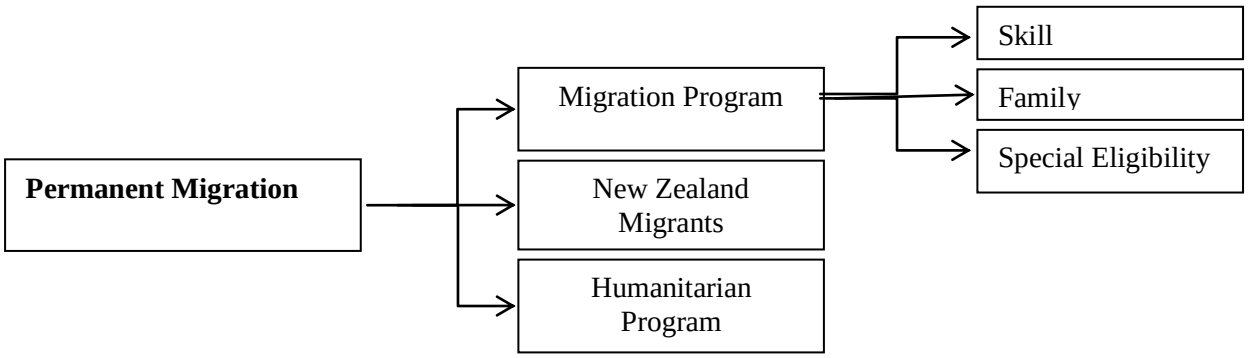
**Figure 1.2 The composition of immigrants by birthplace in 2008 (in persons)**




**Source:** Author's own calculations based on the data from ABS (2011) and DIAC (2009c).

The categories for permanent migration to Australia, as can be seen in Figure 1.3, are skilled, family, humanitarian, special eligibility programs and a program for New Zealand citizens. The special eligibility stream contains a very small number of people such as former Australian residents who have maintained their ties with Australia (DIAC 2009c). New Zealanders travelling to Australia in most cases do not need a visa and are only required to have a valid New Zealand passport (DIAC 2009b). Hence, Borooah and Mangan (2007) suggested that the Australian immigration policy is designed to accommodate three main categories: business and skills related, family reunion and humanitarian. After ending discriminatory policies, Australia initially gave higher priority to humanitarian migration and family reunification, as argued by Walsh (2008), but this phase did not last long. Globalisation and the increasing importance of advanced manufacturing and specialised services stimulated recognition by the Australian Government of the potential economic impacts of their immigration policy. Following the Canadian example, the Numerical Multifactor Assessment System (NUMAS), which is equivalent to the current points test in Australia, was introduced in 1979. This points system created a numerical scale for skilled applicants only, in which points are given for certain characteristic predetermined by the government, such as age or education. Entry for these applicants would be granted only if they could accumulate enough points to get a pass mark.

**Figure 1.3 Permanent migration to Australia programs**




**Source**: DIAC (2009c)

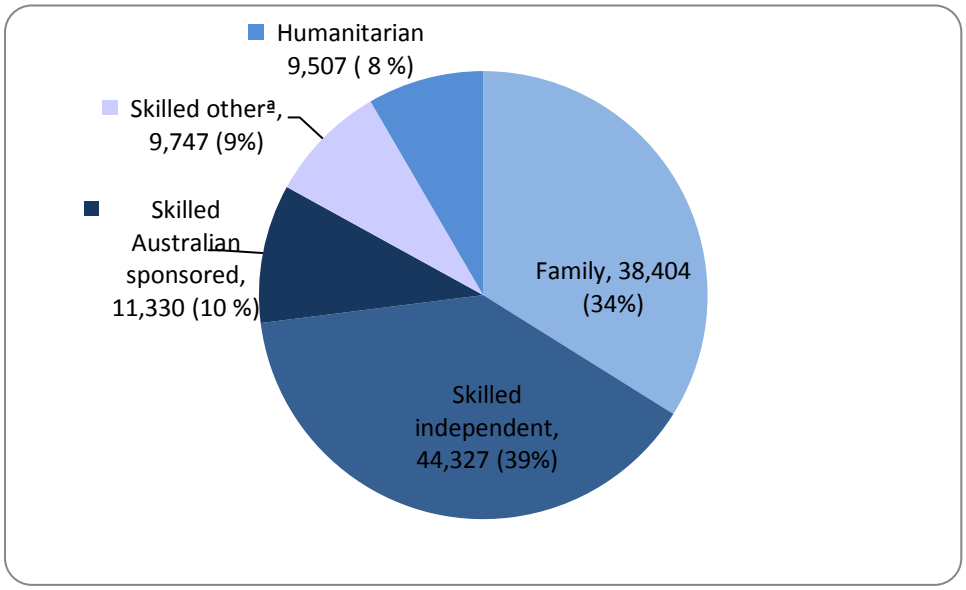
With the increasing life span and declining fertility of the populations of potential immigrant-receiving countries, their governments have used their migration policies as population policies. With the emergence of post-industrial societies, the quality rather than quantity of migrants has become primary focus of state policies, according to Walsh (2008). Similarly to Canada, he argues, Australia expanded, intensified and modified its points system to attract people who would be of positive gain to Australia. The expansion of the points test included

the introduction of the Business class as a faster-processing subset of the Skilled category aimed to bring wealthy professionals and entrepreneurs to the country. The importance of economic migration was intensified by making the points system more restrictive and reversing the ratio of skilled to family/humanitarian migrants. Prior to 1996, the majority of immigrants entered through the family and refugee categories, whereas after that, the skilled independent program exceeded the humanitarian category and steadily grew to reach the size of the family category (DIAC 2008; DIMIA 2002; Walsh 2008). Likewise, Borooah and Mangan (2007) showed that in 2000–2001, 54 per cent of migration was in the skills stream. These arrangements ensured an increase in the number of wealthy and educated Australian immigrants who are no longer viewed as a labour from abroad. As noted by Walsh (2008), these immigrants should be also able to afford to pay significantly higher fees for processing visa and citizenship applications, which are among the modifications to the points system as a 'user pays' model. In addition to offsetting its expenditure by increasing fees for migrants, the government also cut migration program expenses such as language classes and settlement assistance, and reduced access to social security entitlements.

The DIAC Report (DIAC 2008) confirmed that the skilled migration class remains the primary category in Australia. Figure 1.4 shows the distribution of the main categories of the 2007–2008 migration program which, according to DIAC (2009c), was the largest[4] since the previous peak registered in 1988 (Spinks 2010)**.** As these data suggest, skilled independent immigrants are the biggest group at 39 per cent, exceeding the size of the group of migrants that arrive to unite with their families. The smallest group of 8 per cent is recorded under the humanitarian program. The steady increase in the arrivals of qualified immigrants in the independent stream after 1997 can be seen in the reports produced by DIAC (2008), while the number of immigrants in other categories has been fluctuating, suggesting that the government's strategy to expand economically beneficial sectors has proved to be successful. At the same time, the high number of qualified residents raises concerns about their integration into the labour market and whether the economic performance of these immigrants contributes to the welfare of Australia.

[4] This 2007–2008 migration program outcome of 158,630 persons, however, was outperformed by the 2008–2009 outcome of 171,318 persons – the highest number for the decade (DIAC 2010, 2011).

**Figure 1.4 Immigrants by eligibility category in 2007–2008 (in persons)**




**Notes:** Does not include immigrants arrived under Special Eligibility Program and the non-program migration mostly used for migration by New Zealand citizens.

[a] includes Business Skills, Employer Nomination Scheme and Distinguished Talents programs.

**Source:** DIAC (2008).

## 1.3 Data description

Two sources of data were used for the research: the Household, Income and Labour Dynamics in Australia (HILDA) Survey and the Longitudinal Survey of Immigrants to Australia (LSIA). Although the primary advantages of HILDA and LSIA over similar surveys are their large sample sizes and panel structures, these surveys also possess other distinctive features.

The HILDA Survey is managed by the Melbourne Institute of Applied Economic and Social Research at the University of Melbourne and is funded by the Australian Government Department of Families, Housing, Community Services and Indigenous Affairs. The main purpose of this survey is to collect information about economic and subjective well-being, labour market dynamics and family dynamics. HILDA has surveyed the same cohort of 13,969 Australian residents, comprising 7682 households, at annual intervals since 2001. Although HILDA has a standard set of questions addressed to all adult members of a household in every interview, special questionnaire modules are also included in each wave. The modules on household finances were included only in 2002 and 2006; hence, data collected in these two years were used in this research. Because there are data on both

Australian-born and foreign-born residents, it is possible to compare the financial behaviour of these two groups, as reported in Chapter 2, Chapter 3 and Chapter 5.

Unlike HILDA, LSIA surveys only foreign-born residents who have recently arrived in Australia. This longitudinal survey was designed to collect information about problems faced by immigrants on their arrival and in their first few years in Australia. The Department of Immigration and Multicultural and Indigenous Affairs has managed LSIA since its start in 1993. Although LSIA covers three cohorts arrived between September 1993 and August 1995 (LSIA1), from September 1999 to August 2000 (LSIA2) and from December 2004 to March 2005 (LSIA3), only the first two are used for this research since the last cohort was interviewed with a very limited questionnaire. Most of the LSIA questions are aimed at Primary Applicants for Australian Residency, defined as individuals whose characteristics served as the basis of their approval for migration to Australia. For that reason, samples of LSIA1 and LSIA2 are limited to this category of applicants, which is represented by 5,192 persons in the first survey and 3,118 persons in the second. The remitting behaviour of these two cohorts of immigrants is examined and compared in Chapter 4. The well-being of the second cohort is compared with the well-being of the immigrant-only sample from HILDA in Chapter 5.

As each dataset contains some information not available in the other, using both HILDA and LSIA enabled a more complete analysis of immigrants' financial behaviour. For example, HILDA, despite being a source of rich information about household finances, lacks detailed information related to immigrants' arrival in Australia and their families overseas. Using LSIA data, on the other hand, provided useful immigrant-specific data, such as information about their entry visas to Australia and their remitted amounts, but the data were not sufficient to estimate their financial risk-taking ability or saving habits. Therefore, the application of both HILDA and LSIA data allowed a more detailed investigation of immigrants' attitudes to their finances than using each dataset on its own.

## 1.4 Contributions of the thesis

This section clarifies the contributions of this thesis to the existing literature and describes the key findings of the following four chapters. Chapter 2 investigates what affects the financial market participation of Australians, and whether the home-country institutions of immigrants to Australia influence their participation in Australian financial markets. Chapter 3 analyses

the determinants of the saving rates of Australian households and, for those who arrived from overseas, how these rates are related to their home countries' characteristics, such as the national saving rate. Chapter 4 changes the focus from wealth accumulation to a decumulation aspect of immigrants' financial behaviour, that is, the provision of financial help to their friends and relatives overseas. In particular, it analyses what determines how often and how much immigrants remit money abroad, and how changes in Australian immigration policies in the late 1990s affected remittance outflows from Australia. Finally, Chapter 5 looks at the overall well-being of Australians and whether well-being, among other factors, depends on a person's country of origin. The financial well-being of immigrants is given special attention as one of the key domains of general well-being.

The analysis of the financial behaviour of immigrants to Australia starts by looking at their ability to take financial risk. Participation in financial markets is associated with financial risk which, in turn, increases with higher returns. Hence, stock market investment is a popular measure of financial risk-taking. The additional measure, uniquely used in this research, is financial risk-taking self-measured by individuals on a scale from 1 to 4. These two measures are used for the first time for the estimation of the financial risk-taking of Australian residents, reported in Chapter 2. This chapter first investigates what determines financial risk-taking behaviour and if it differs for Australians born overseas. Subsequently, it is investigated if any detected differences can be attributed to the effects of immigrants' home-country institutions. Although the importance of institutional quality for the financial development of a country is a widely accepted fact, the effect of informal institutions on a country's economy through international migration has not been broadly explored. The quality of institutions in immigrants' home countries, reflected in their customs and beliefs, can become an informal constraint to the financial development of Australia by preventing immigrants from taking part in the financial market activities. Hence, Chapter 2 also attempts to address this important issue by applying to Australian data an approach similar to the one used by Osili and Paulson (2008) for immigrants to the US, and extending the approach by using an additional measure of financial risk.

Consequently, Chapter 2 analyses the determinants of the financial risk-taking of Australian residents and whether this ability differs between native-born and foreign-born Australians. If this is the case, this chapter investigates to what extent this differential can be explained by the difference in the quality of home institutions. The findings reported in this chapter reveal that, among other factors, both the level of stock market investment and the level of self-

reported financial risk-taking, at some periods, are dependent on whether an individual was born in Australia or abroad. In particular, both these measurements of financial risk take on lower values for immigrants to Australia than for other Australians. The difference in these risk attitudes can be explained by the institutional environment in the country of origin. However, institutions affect the financial behaviour of individuals through their investment and their risk-taking decisions in different ways.

The analysis proceeds in Chapter 3 by examining personal as well as home-country characteristics that affect the saving behaviour of immigrants to Australia. The importance of this kind of research for Australia is undeniable considering its ageing population and low fertility rate. Current literature focuses on more general aspects of the financial performance of Australian migrants such as income and wealth. Adding to the previous chapter, this chapter, for the first time to the best of the author's knowledge**,** investigates whether the quality of home institutions plays a significant role in immigrants' saving behaviour. In addition, the chapter contributes to the literature that attempts to explain the national saving rates differential, by using Australian data, also for the first time.

Chapter 3 begins by investigating whether the saving rates of immigrant households are different from those of Australia-born households, using both a houshold-head-only sample and an extended sample of all household members. Then, if differences are detected, it is investigated if country-of-birth characteristics contribute to this gap. Since personal savings affect the savings of the nation, personal saving rates are supposed to be correlated with national saving rates. Hence, Chapter 3 also tests whether the national saving rates of immigrants' home countries affect their saving decisions after migration to Australia. The results suggest that immigrants have lower saving rates than their native-born counterparts. Among the determinants, the quality of the institutional environment in the country of origin is found to be positively correlated and the national saving rate negatively correlated with the immigrants' saving rates in Australia. The latter effect, though, is evident only in the extended sample of all household members.

Another determinant of immigrants' saving rates is the amount they send overseas to support their families and friends, which is examined in Chapter 4. Understanding the factors influencing immigrants' remitting decisions is beneficial not only for the recipient economies but also for the governments of countries with a high proportion of immigrant population, such as Australia. The immigration rates to Australia in the last decade have skyrocketed, and

the remitted amount from Australia has increased to an even greater degree, which may prejudice the positive effect from international migration for the country's economy. This coincides with the recent reform of Australian immigration policies aimed to attract more qualified immigrants whose higher earning potential could have also contributed to the rise in outward remittances. Thus, Chapter 4 contributes to the analysis of Australian immigrants' attitudes to finance by analysing their remitting behaviour.

Unlike the data from the HILDA survey used in Chapter 2 and Chapter 3, LSIA has information about remittances in addition to other data relevant only for immigrants, such as their visa type used for entering Australia. This enables a unique analysis of the factors contributing to an immigrant's ability and willingness to remit, with special emphasis on the effects of Australian immigration policies in Chapter 4. This chapter first selects the best model to decribe an immigrant's remitting behaviour from three popular approaches: the two-part model, the Tobit model and the Heckman two-step model. The chosen model is then used to identify factors influencing an immigrant's remitting performance with the category of their entry visa being one of the variables considered. A comparison of the estimates for the cohorts of immigrants who arrived in Australia during different policy regimes should give some insight into how the 1990s government migration policies affected remittance outflows from Australia. The findings reported in Chapter 4 reveal that: first, the Heckman two-step model is the best approach for analysing the determinants of the remitting performance of the first cohort, and the two-part model is the most suitable for describing the factors affecting the remitting performance of the second cohort; and second, the effect of holding a certain visa category on the remitted amount, but not this effect on the remitting probability, changes between cohorts. This change could be attributed to the tougher requirements of the points test introduced in 1999 that, in turn, changed the profile of Independent Visa holders.

Chapter 5, the last empirical chapter of the thesis, shifts the focus from the direct effects of immigration on the Australian economy to the indirect effects through immigrants' well-being. As argued by Oswald, Proto and Sgroi (2008), happier residents mean higher productivity, which facilitates the growth of a country's output. The degree of happiness can be affected by a number of factors, including the residents' financial situation, which can be measured not only by their income but also subjectively assessed by themselves. Nevertheless, to the best of the author's knowledge, no research has been done to investigate

the difference in well-being between Australian-born and overseas-born individuals and its correlation with their financial well-being.

Hence, the purpose of Chapter 5 is to investigate what determines the well-being of Australians defined as their life satisfaction, and to investigate if the level of well-being is different for people born overseas. Since the main purpose of people undergoing the numerous impediments associated with international migration is to improve their financial situation, the role of financial well-being in overall well-being is also analysed. Financial well-being is measured by objective measures such as the ability or inability to pay bills and difficulty in raising cash in an emergency, and subjective measures such as financial satisfaction and financial prosperity. The application of regression models using both HILDA and LSIA longitudinal data indicates that immigrants are less satisfied with their lives than Australian-born individuals, although the levels of their financial satisfaction are not different. Financial prosperity, in contrast, is lower for Australian-born than for Australians born overseas. Although immigrants experience a higher level of difficulty in raising additional cash in an emergency, their ability to pay basic bills is similar to that of native-born Australians. These results may be attributed to the relative deterioration of immigrants' financial situations after migration and to the cultural shock experienced by them, thus making the assessment of their well-being far more complex.

Overall, the empirical findings of the research show that immigrants' financial behaviour is different from that of native-born Australians. In particular, they save less and take lower financial risk. Their past influences their financial habits through customs and beliefs which take time to change. The lower financial risk-taking of new Australian residents could also be explained by their need to support families left in their home countries. Both the likelihood of remitting and the remitted amount do not depend solely on immigrants' earning abilities. For example, having children in their home countries increases the probability of remitting, and having a secure job and higher earning potential affects the amounts of these transfers. Recent increases in immigration flows to Australia have also increased the remittance outflows from the country, mostly due to an increase in immigration under the independent program. This suggests that immigrants to Australia who arrived after 1999 immigration reform are financially better off on average than those who immigrated before this reform. However, these immigrants are still not as happy as native-born residents. The initial positive effect of their higher income in Australia could wear off due to their adjustment to the new

financial situation and using the incomes of native-born Australians as new points of comparison.

# CHAPTER 2. THE FINANCIAL RISK-TAKING OF IMMIGRANTS TO AUSTRALIA AND THE INFLUENCE OF HOME-COUNTRY INSTITUTIONS[5]

## 2.1 Introduction

In the year 2000, 24.6 per cent of Australian residents of working age were immigrants. This was the second highest rate of OECD countries after Luxemburg (27.4 per cent) (Docquier & Marfouk 2005). Moreover, ageing populations have resulted in the reduction in labour supply in many industrialised countries and, as a consequence, increased demand for labour from abroad. The forecast by the World Bank (2006b) was that an increase in immigration flows from developing to high-income countries would exceed the current annual growth of 3 per cent. This means that immigrants' financial behaviour has a huge impact on the Australian financial system and this is likely to increase in the future.

Over the last few decades, there has been a significant reduction in international trade barriers and financial transaction costs but, in contrast, international migration is still subject to high barriers. This is due to political controversy around migration in spite of its considerable economic benefits. There are gains to society from immigration such as reduced labour market pressures as well as some temporary impediments. When emigrating to another country, people carry their experiences and traditions from their home countries. An example of a temporary impediment is that if an immigrant had negative experiences with the financial market in their home country, this can prevent them from participating in the financial market of their host country and constrain its financial growth.

Being aware of the factors which affect the financial risk-taking ability of a country's citizens is important for the country's financial development. Participation in any financial activity exposes individuals to some financial risks for higher return investments involving greater risk and requiring greater trust in institutions. Investing in equities, for instance, requires more confidence in institutions than opening a savings account in a bank (Osili & Paulson 2008). Accordingly, a tendency to take a higher financial risk when investing in a country's financial market is an indicator of a healthy economy with growth potential. Risk-taking behaviour, however, might differ between people of different countries depending on

[5] A version of this chapter was published in *The International Journal of Diversity in Organizations, Communities and Nations*, vol. 11, no. 4, pp. 37-54.

country-specific factors, such as a country's institutional environment. The high proportion of immigrants in Australia suggests the need for analysis that identifies the factors affecting their participation in the financial market and includes their experience before migration to Australia.

This research first investigated what determines the financial risk-taking of Australian residents, and whether it is different for residents born overseas. Because a difference was found, the study proceeded by testing if the home-country institutions of the immigrants play any part in this. Individuals' risk-taking behaviour can be described by their self-assessed preparedness to take financial risk. Stock market investment is also a popular measure of financial risk. Cardak and Wilkins (2009) argued that shares or common stock represent the main group of risky financial assets. Thus, in addition to an individual's own assessment, the probability of an individual investing in the stock market is also used to measure their propensity to take financial risk. These measures of financial risk-taking, however, are based on somewhat different concepts; hence this chapter also analyses if they can be used interchangeably.

The findings reported in this chapter provided evidence that both the level of stock market investment and the level of self-reported financial risk-taking are lower at some periods for individuals born abroad than for native-born Australians. The difference in these risk attitudes can be explained by the institutional environment in immigrants' home countries. However, institutions affect the financial behaviour of individuals who arrive in Australia as adults through their investment and risk-taking decisions in different ways. Thus, despite a close association between equity investment and financial risk-taking self-assessed by individuals, these terms are not interchangeable.

Following the literature review and the discussion of data and methodology, the empirical results are presented in two stages in this chapter. At the first stage, the financial risk-taking of Australian residents was measured by the probability of their investment in the share market. Subsequently, it was investigated if an individual's decision to own stocks depends, among other factors, on whether they were born in Australia or overseas. If this is the case, it was tested if immigrants' home-country institutions affect their stock market participation, thus possibly explaining any variation from that of native-born Australians. A similar analysis was applied to the financial risk-taking self-assessed by individuals. Hence, at the second stage, it was investigated whether being born overseas is one of the factors affecting

the self-assessed financial risk-taking by Australian residents, and to what extent any detected differential between native and foreign-born Australians could be explained by the immigrants' home institutions' constraints. The results obtained at both stages were compared to check the appropriateness of using an individual's participation in the share market in place of their self-assessed financial risk-taking. The description and analysis of results are followed by concluding remarks.

The analysis of the financial risk-taking of Australian residents was performed by using individual attributes as well as country characteristics. The data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey contain a wide range of personal characteristics such as age, gender and education. Country data, which were employed to measure the effect of home-country institutions, were obtained from other international surveys and databases, such as World Bank Development Indicators.

## 2.2 Literature review

In 2008, one quarter of the Australian workforce was born overseas (DIAC 2009c). Immigrants contribute to the growth of Australian economy mainly by their high propensity to work, by their skills and by increasing the working-age population (DIAC 2010). Among other positive economic outcomes for the country are a 'brain gain' representing the net increase in the number of skilled workers in Australia and immigrants' strong contribution to the Australian Government budget. Economic theory, as described by Giordani and Ruta (2011), also suggests that immigrant workers raise national welfare through the increase of benefits accrued to 'native capitalists'. In addition to these obvious and direct benefits for the Australian economy, immigration can also affect the country's economic growth indirectly by influencing its financial environment.

Building a sound financial system is important for any country as it gives individuals and companies confidence to invest. Rousseau and Sylla (2001) defined the characteristics of a good financial system: sound public finances and public debt management; stable monetary arrangements; a variety of banks; a central bank to stabilise domestic finances and manage international financial relations; and well-functioning securities markets. A financial system that includes these components will be able to manage capital domestically and thus contribute to economic growth.

Levine (2004) reviewed a vast range of literature debating the advantages and disadvantages of different types of financial systems. Some studies argued for a market-based system, others for a bank-based financial system. However, the prevailing argument was that 'both financial intermediaries and markets matter for growth even when controlling for potential simultaneity bias' (Levine 2004, p. 85). Both systems contribute to financial development and both can perform better if the legal system, for example, the legal protection of investors and shareholders, is improved. Many of the authors Levine reviewed also suggested that there are other determinants of financial development such as political, cultural and geographical factors. Nevertheless, as emphasised by Levine (2004), more research is required for a better understanding of what contributes to financial growth and the interaction between financial development and economic growth.

Although, according to Rodrik, Subramanian and Trebbi (2004), all factors explaining differences in countries' development can be grouped into three major strands – geography, integration and institutions – the last group was found to be the most important. They argued that once institutions are controlled for, integration and geography have hardly any direct effects on incomes. This has been supported by findings from a number of studies investigating the link between institutions and economic performance (Efendic, Pugh & Adnett 2011; Rajan & Zingales 2003). This consensus supported the earlier proposition by North (1990) that institutions affect economic performance. He defined institutions as formal constraints devised by people and informal constraints that embody customs and traditions.

Unlike most research on the importance of the institutional environment for financial growth which use cross-country data, Osili and Paulson (2008) used American data to analyse the effect of informal institutions on the financial behaviour of immigrants. The authors claimed that changing formal institutions by the government is not as challenging as changing culture and behavioural norms. Hence, they investigated two crucially important features of economic development: financial market development and immigration.

A number of different measures of institutional quality were employed by Osili and Paulson (2008) to ensure the robustness of their results. First, they used the attributes of a developed financial system such as property rights protection and a transparent and reliable legal system that, in accordance with Rajan and Zingales (2003), could be regulated only by a country's government. Osili and Paulson (2008) also accounted for a country' geography to capture stronger institutional performance in countries located further from the equator (Rodrik,

Subramanian & Trebbi 2004), and they also took into account human capital that, as they argued, also determines a country's institutional quality.

The findings of Osili and Paulson (2008) suggested that the quality of home country institutions is an important determinant of immigrants' financial behaviour in the US. In particular, they argued that: first, informal institutional constraints are enforced through immigrants' behaviour; second, these institutional controls start influencing people at a very young age, presumably through school and family networks; and, finally, the informal institutional effects on immigrants' financial behaviour differ from other cultural effects. For example, institutional constraints are not transferred through generations once the formal institution environment is altered, and they are not eradicated through obtaining more education.

The institutional effects in Australia may be different from those experienced in the US due to their different immigration policies and sources of migrants. According to Garnaut (2003), the distribution of costs and benefits from immigration in Australia is vastly different from that in the US. Due to the higher education level of Australian immigrants, their arrival tends to raise the average income of relatively unskilled labour in Australia in contrast with the depressing effect of immigration on the income of low-skilled Americans. In addition, the 'multiculturalist policy' followed in Australia is still a subject of debate in the US (Tehranian 2003).

Some work has been done to analyse how migration to Australia influences its financial markets. For example, Cobb-Clark and Hildebrand (2008) compared and analysed the net worth and asset portfolios of immigrant-only, mixed and native Australian families. Their results suggested that 'the nativity gap is much smaller in Australia than in other immigrant-receiving countries' (Cobb-Clark & Hildebrand 2008, p. 17). On average, they argued, single immigrants even have $185,000 more wealth than single natives do, whereas the net wealth of foreign-born couples is 83 per cent of that of native-born couples.

The difference in risk preferences has been suggested as one of the reasons for the gap in wealth accumulation (Amuedo-Dorantes & Pozo 2002). They claimed that risk preferences can affect wealth accumulation through investment and saving choices. Particularly, these preferences result in immigrants in the US saving less than natives. Additionally, Cardak and Wilkins (2009), in their study of determinants of risky assets holdings by Australian households, indicated a negative correlation of being an immigrant with a non-English-

speaking background with household allocations to risky financial assets. Similarly, Bonin et al. (2007) argued that foreign nationals in Germany generally are more risk averse than natives are.

However, despite the great significance of taking higher financial risk, immigrants should practice this with caution. Even though assets involving greater financial risk, such as equities, are important contributors to household wealth, Australian's asset portfolios are still dominated by housing and superannuation (Headey, Warren & Wooden 2008). Similarly, as suggested by Doiron and Guttman (2009), government policies should be aimed at improving labour market performance and eliminating barriers to wealth accumulation for immigrants. This suggests a balanced approach to policy reforms which would consider all aspects contributing to the growth of wealth.

The importance of financial development is undeniable. Hence, research on the factors contributing to financial growth is an area of great interest. Although the importance of the quality of institutions for financial growth is highlighted in the majority of papers, the effect of informal institutions on Australian financial markets through behaviour of its immigrants has not yet been investigated. In addition, risk preferences have been suggested as an important determinant of financial market outcomes in most studies; however, the factors affecting financial risk-taking have not been extensively explored.

The popular definition of risk attitude used in finance is equivalent to a risky choice based on a risk-return framework. For example, an investment in riskier assets should be expected to provide higher benefits. Hence, some researchers have used equity investment with its higher than average returns and higher riskiness as a measure of financial risk-taking (Cardak & Wilkins 2009). However, Sarin and Weber (1993) argued that although expected return is a good measure of value, this measurement of risk is not so clear. Risk-taking ability might be affected by factors which are difficult to quantify and some risk measurements can be inferred from a person's choice. For instance, risk premium and variance are measures of risk derived from an expected utility model. This research suggests that people's perception of the risks involved, which affects their assessment of the financial risk they are prepared to take, can also measure financial risk. Hence, financial risk in this study is measured by both equity investment and individuals' perceptions of their level of financial risk-taking. The application of the former measure is consistent with the other studies; however, the application of the

latter definition of financial risk and the interchangeability of both terms have not been tested yet.

## 2.3 Data and methodology

As discussed above, the ability of an individual to take financial risk can be represented by both equity investment and self-reported financial risk-taking (hereinafter referred to as SRFRT). The financial risk-taking in this research was estimated by two models which are described in the section below. The subsequent sections describe personal and country-level data used in this chapter.

### 2.3.1 Methodology

The methodology used discrete dependent variable models. Osili and Paulson (2008) investigated stock market investment decisions using a linear probability model. This study extended their analysis by using measures of SRFRT behaviour as well as stock market investment. As SRFRT contains four risk levels, discrete dependent variable models were used in this analysis instead of the linear probability model. In addition, estimations from two separate periods and combined data were compared. All analyses were performed by using STATA software (version 11).

Since stock market participation is often used as a measure of financial risk-taking, the factors affecting the equity investment of Australian residents were investigated first. To be consistent with the model used by Osili and Paulson (2008), it was assumed that the probability density function of the error term is the standard normal distribution. Accordingly, the decision to participate in the stock market was described by the probit model, which expresses the probability that an individual has equity investment as:

$$\Pr(S_{ij}=1 \mid X_i, Z_j, \beta_1, \beta_2) = \Pr(\alpha + \beta_1 X_i + \beta_2 Z_j + \varepsilon_{ij} \geq 0) = \Phi(\alpha + \beta_1 X_i + \beta_2 Z_j), \quad (2.1)$$

where $\Phi(\varepsilon_{ij})$ is the probit function, which is the standard normal cumulative distribution function; $S_{ij}$ is the decision to own stocks by an immigrant $i$ from country $j$ which is equal to 1 for positive equity investment and 0 for zero equity investment; $X_i$ includes individual controls such as age, income and education; and $Z_j$ represents the quality of institutions in country $j$. Details of these variables are given in Table A.1 and Table A.2 in Appendix A.

A second model measured the determinants of the financial risk-taking behaviour represented by SRFRT. HILDA provided a self-reported assessment of the financial risk a person is prepared to take. This variable takes values from 1 to 5, with 1 representing the highest risk, 4 zero risk behaviour and 5 not having any spare cash for an investment. The dependent variable in this study was created by using only the first four options in an ascending order. Thus, the financial risk-taking ($SRFRT_{ij}$) variable was reformed to a scale from 1 to 4, with 4 measuring the highest risk, which necessitates the use of an ordered dependent variable model with normal distribution. Since the probit link function is often employed for this kind of model, the ordered probit model was used to estimate SRFRT:

$$\Pr(SRFRT_{ij} = M \mid X_i, Z_j, \beta_1, \beta_2, \gamma) = 1 - \Phi(\gamma_M - \beta_1 X_i - \beta_2 Z_J) \quad , (2.2)$$

where $\gamma_M = M = 1,...,4$ , and other variables are as described above.

The two models have similar features. The probit model used for equity investment describes the relationship between independent variables and an outcome expressed as a probability represented by a dichotonomous dependent variable. The probit model uses a normal distribution to estimate the possibility that a person will invest in shares given their personal attributes and country-of-origin characteristics. Rather like the probit model, the ordered dependent variable model measures the probability that a person will take a certain level of risk given their characteristics. It assumes the levels are ordered based on increasing risk-taking behaviour.

These models were estimated for both years separately, thus enabling the comparison of the results in different time periods. A panel data model was also used to provide further insights into financial risk-taking behaviour over time. The Likelihood Ratio Chi-Square statistic was used to test whether at least one of the regression coefficients in each model was not equal to zero and all models passed this test. Similarly, the random effect logit model used for the estimation of the equity investment of people from the panel dataset passed the Wald Chi-Square test.

### 2.3.2 Personal data

The data on individuals were taken from the HILDA Survey. HILDA provides longitudinal data on randomly selected Australian residents occupying private dwellings all over the country and focuses on the subjects of families, income, employment and well-being

(Wilkins, Warren & Hahn 2009). As discussed in Chapter 1, only data from 2002 and 2006 were used in this research due to the household finances module being included only in these two years. Data collected in 2002 consists of 18,295 individuals, and the 2006 survey has a sample size of 17,454, of whom 13,041 and 12,905 respectively were interviewed.

Personal characteristics included in the models are age, wealth, income, employment, education, gender, marital status, number of resident children and Major Statistical Region (MSR). Since a better financial situation, generally measured by wealth and income, is conducive to an individual's ability to take financial risk, it is expected that the variables that affect wealth accumulation also influence the propensity to take financial risk. According to Bauer et al. (2007), a household's demographic characteristics such as age can explain a large portion of the nativity gap. They suggested that immigrant households in Australia are typically older and, therefore, are less likely to have dependent children than Australian-born households. The resultant immigrants' relative educational advantage, even though it does not translate into a wealth advantage, reduces the immigrants' wealth disadvantage, which otherwise could have been higher by $14,000. Accordingly, it is expected that the number of dependent children would have a negative effect on an individual's financial risk-taking potential due to demands on family financial resources associated with raising a child, but older age and higher educational level, which are associated with a better financial situation, would have a postive effect. To see if there is a non-linear relationship between individuals' financial risk-taking and their age, a squared age variable was included in addition to the actual age. Osili and Paulson (2006) suggested that married individuals show more active financial market participation, measured by their ownership of savings and cheque accounts. Hence, it is expected that they are financially better off than their single counterparts and, accordingly, are more prone to a risky attitude to finances. Financial risk-taking can also depend on an individual's gender, with men having a lower probability of holding savings and cheque accounts (Osili & Paulson 2006), and on an individual's employment status, which also affects their financial security. Similar to the use of the Metropolitan Statistical Areas by Osili and Paulson (2006, 2008), the inclusion of MSR fixed effects captures the effect of a community whose residents could have a common economic environment and possibly similar preferences. All personal variables are described in Table A.1 in Appendix A.

To meet the purpose of this analysis, some transformations of the sample were performed. For example, in panel data estimations or whenever the samples for 2002 and 2006 were

combined, household wealth and income were converted into 2002 prices to account for inflation. The sample size was limited to individuals aged 15 and older, assuming that children under this age do not have enough wealth to take financial risk. Furthermore, observations with negative values of disposable income were dropped, as such individuals were assumed to be unable to take financial risk, and the observations without any information on country of origin were not included. These restrictions reduced the sample sizes to 13,002 persons in 2002 and to 12,853 in 2006.

Table 2.1 (Panel A) compares some of the characteristics of the immigrants and native-born Australians surveyed in 2002. The average immigrant is five years older, has slightly fewer children in the household and is better educated than an average person born in Australia. Compared to individuals born in Australia, immigrants have a similar gender distribution[6], a higher percentage of married individuals, a lower employment rate and the same income. However, in agreement with a number of studies (Cobb-Clark & Hildebrand 2008; Doiron & Guttman 2009), the mean value of the wealth of immigrant households is lower than that of native-born Australians. In terms of financial risk-taking, despite the fact that both groups are prepared to take similar financial risks (1.6 out of 4), more of the Australian-born population own stocks than immigrants do, with an average value of 45 per cent compared to 38 per cent.

A similar analysis is carried out in Panel B and Panel C of Table 2.1, which compares the characteristics of immigrants and Australian-born individuals using data collected in 2006 and the combined data for 2002 and 2006, respectively. The comparison shows an identical picture for the combined dataset to that found for the 2002 data, with a couple of exclusions in the 2006 responses. First, in 2006, unlike in 2002, the mean financial year gross income is significantly higher for immigrants by almost $1,300. Another difference is that in 2006 the levels of household wealth do not differ between immigrants and native-born individuals, whereas in 2002 there is a wealth advantage in favour of the latter group. This wealth advantage of native-born individuals is also present in the combined dataset. Specifically, in

[6] Comparison of age and gender ratio data from the Australian Bureau of Statistics reveals similar results. For example, immigrants surveyed in 2002 and 2006 are older than Australian-born residents (with median age recorded in both periods as 46 for overseas-born and 33 for Australian-born residents). A slightly higher median age in HILDA could be attributed to the exclusion of children below the age of 15 from the sample. Similar to HILDA, both groups in both periods also have an approximately equal percentage of male and female respondents (ABS 2011). This suggests that the HILDA dataset is a good representative sample of the Australian population.

the combined dataset, mean income per person for both groups is above $27,000 and households with Australian-born members are wealthier by $27,400 on average.

**Table 2.1 Characteristics of foreign and Australian-born individuals**

**Panel A) 2002 data**

| Characteristics | Australian-born | Foreign-born |
|---|---|---|
| Age | 42.36 | 47.67*** |
| | (17.97) | (16.78) |
| % male | 47.38 | 48.60 |
| % married (or de-facto) | 60.05 | 70.73*** |
| % employed | 63.97 | 55.59*** |
| Number of resident children 14 y.o. or younger | 0.54 | 0.50** |
| | (0.100) | (0.94) |
| Disposable income for financial year ($) | 24,187 | 24,274 |
| | (21,911) | (23,438) |
| Household wealth ($) | 452,922 | 419,285** |
| | (676,976) | (671,913) |
| **Level of highest education achieved (%)** | | |
| No post-school qualification | 55.22 | 48.83*** |
| Bachelor degree or higher | 17.06 | 22.77*** |
| Other post-school qualification | 27.72 | 28.40 |
| **Financial risk-taking** | | |
| Preparedness to take financial risk (scale 1-4) | 1.64 | 1.61 |
| | (0.70) | (0.72) |
| % investing in equity | 44.89 | 38.34*** |
| Number of individuals | 9,924 | 3,078 |

**Notes:** Mean values are reported unless otherwise stated. Standard deviations are in parenthesis. The sample is restricted to individuals aged 15 or older who have non-missing data country of origin. *** indicates a significant difference from a native-born Australian at at least the 1% level, ** at at least the 5% level, * at at least the 10% level, when mean-comparison t-test is used.

**Panel B) 2006 data**

| Characteristics | Australian-born | Foreign-born |
|---|---|---|
| Age | 42.29 | 49.50*** |
| | (18.64) | (16.96) |
| % male | 47.02 | 47.37 |
| % married (or de-facto) | 58.94 | 69.92*** |
| % employed | 66.29 | 58.94*** |
| Number of resident children 14 y.o. or younger | 0.48 | 0.45* |
| | (0.93) | (0.86) |
| Disposable income for financial year ($) | 30,009.06 | 31,271.56** |
| | (26,391) | (29,858) |
| Household wealth($) | 675,141 | 671,639 |
| | (1,251,811) | (1,232,013) |
| **Level of highest education achieved (%)** | | |
| No post-school qualification | 51.72 | 43.74*** |
| Bachelor degree or higher | 18.71 | 26.55*** |
| Other post-school qualification | 29.58 | 29.71 |
| **Financial risk-taking** | | |
| Preparedness to take financial risk (scale 1-4) | 1.64 | 1.64 |
| | (0.71) | (0.74) |
| % investing in equity | 41.71 | 37.09*** |
| Number of individuals | 10,130 | 2,723 |

**Notes:** Mean values are reported unless otherwise stated. Standard deviations are in parenthesis. The sample is restricted to individuals aged 15 years or older who have non-missing data country of origin. *** indicates a significant difference from a native-born Australian at at least the 1% level, ** at at least the 5 % level, * at at least the 10% level, when mean-comparison t-test is used.

### Panel C) combined data

| Characteristics | Australian-born | Foreign-born |
|---|---|---|
| Age | 42.33 | 48.53*** |
| | (18.31) | (16.89) |
| % male | 47.20 | 48.02 |
| % married (or de-facto) | 59.49 | 70.35*** |
| % employed | 65.14 | 57.16*** |
| Number of resident children 14 y.o. or younger | 0.51 | 0.47*** |
| | (0.96) | (0.91) |
| Disposable income for financial year ($) | 27,128 | 27,559 |
| | (24,451) | (26,870) |
| Household wealth($) | 565,173 | 537,740* |
| | (1,015,210) | (983,728) |
| **Level of highest education achieved (%)** | | |
| No post-school qualification | 53.45 | 46.44*** |
| Bachelor degree or higher | 17.89 | 24.55*** |
| Other post-school qualification | 28.66 | 29.01 |
| **Financial risk-taking** | | |
| Preparedness to take financial risk (scale 1-4) | 1.64 | 1.63 |
| | (0.71) | (0.73) |
| % investing in equity | 43.28 | 37.75*** |
| Number of individuals | 20,054 | 5,801 |

**Notes:** Mean values are reported unless otherwise stated. Standard deviations are in parenthesis. The sample is restricted to individuals aged 15 or older who have non-missing data country of origin. *** indicates a significant difference from a native-born Australian at at least the 1% level, ** at at least the 5 % level, * at at least the 10% level, when mean-comparison t-test is used.

Table 2.2 summarises some features of immigrants for all three datasets. More than half of all immigrant respondents were born in Europe. Asia has the second highest number of people migrating to Australia, followed by immigrants from New Zealand and Pacific Island countries with 12 per cent emigration. A quarter of the immigrants arrived in Australia before 1964, and after that arrivals were fairly evenly distributed until the end of the century except for a drop in immigration in the late 1970s and peak arrivals observed in the late 1980s. According to the combined data and the data collected in 2002, the smallest percentage of the immigrant sample arrived in the country after the start of the survey. Just over half of the immigrant population migrated when they were over 20.

**Table 2.2 Characteristics of immigrants**

| Immigrant Characteristic | 2002 data | 2006 data | Combined data |
|---|---|---|---|
| **Year of arrival in Australia (%)** | | | |
| Before 1964 | 24.91 | 23.06 | 24.04 |
| 1965-1969 | 10.71 | 10.33 | 10.54 |
| 1970-1974 | 10.39 | 10.56 | 10.47 |
| 1975-1979 | 5.54 | 5.52 | 5.53 |
| 1980-1984 | 9.48 | 10.19 | 9.81 |
| 1985-1989 | 14.16 | 13.57 | 13.89 |
| 1990-1994 | 10.19 | 10.00 | 10.10 |
| 1995-1999 | 10.26 | 10.08 | 10.17 |
| 2000-2002 (2006) | 4.36 | 6.69 | 5.46 |
| **Age at migration (%)** | | | |
| 5 years or younger | 14.00 | 15.92 | 14.90 |
| 6 to 10 years | 10.77 | 11.16 | 10.95 |
| 11 to 15 years | 8.38 | 8.83 | 8.59 |
| 16 to 20 years | 11.13 | 10.71 | 10.93 |
| over 20 years | 55.73 | 53.38 | 54.63 |
| **Continent of origin (%)[a]** | | | |
| Asia | 23.57 | 23.42 | 23.50 |
| Africa | 5.43 | 5.92 | 5.66 |
| North America | 2.34 | 2.68 | 2.50 |
| South America | 1.85 | 1.88 | 1.86 |
| Europe | 55.07 | 53.86 | 54.50 |
| Oceania (excl. Australia) | 11.74 | 12.24 | 11.97 |

**Notes:** The sample is restricted to individuals aged 15 or older who have non-missing data on country of origin.

[a] Although there are few observations with Antarctica as continent of origin, this is treated as a recording error and only six continents (all except Antarctica) are used in this study.

### 2.3.3 Country data

Data from international databases were employed for understanding the effects of immigrants' home countries' characteristics. A complete list of independent country variables with definitions is presented in Table A.2 in Appendix A. Table A.3 summarises the statistics for each of the country variables used. Of the 120 countries represented as a country of birth in HILDA, full country data is available for only 56 countries.

The Worldwide Governance Indicators created by the World Bank (Kaufmann, Kraay & Mastruzzi 2008b) and institutional characteristics from other studies were used as sources for institutional data. Unlike individuals, a goverment has the power to coordinate standards and enforce non-monetary punishments such as jail terms, as acknowledged by Rajan and Zingales (2003). They argued that this ability of a government enables it to create a sound financial system characterised by respect for property rights, transparent accounting and disclosure systems, contract-enforcing legal systems, protected consumers, a competitive environment and control of egregious risk-taking. The World Bank's Aggregate Governance

Indicators cover most of these aspects and include Voice and Accountability**,** Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law and Control of Corruption. All these variables measure perceptions about the quality of a country's government, such as freeedom of expression, respect for civil liberties, and free and fair elections, as measured by Voice and Accountability (Kaufmann, Kraay & Mastruzzi 2008a). These indicators, originally measured from about -2.5 to 2.5, were normalised by adding 4 to convert them to positive numbers to enable further transformation into logarithms, so they became positive numbers less than 2. Similarly to the study of Osili and Paulson (2008), Constraints on the Executive measuring the degree of institutional constraints on the decision-making powers of chief executives on a scale from 1 to 7 was taken from the Polity IV Project database (INSCR 2009). Data on British legal origin and geographic latitude were taken from La Porta et al. (1999). The former accounts for a greater protection of shareholders in countries with a British legal tradition, and the latter for stronger institutions in countries located further from the equator (Osili & Paulson 2008). Human capital was suggested by Osili and Paulson (2008) as an important factor for developing strong institutions in a country. Hence, a country's school enrolment from the World Bank Development Indicators (World Bank 2010) was another measure of institutional quality used in this reseach.

Country characteristics such as gross domestic product (GDP), market capitalisation and workers remittances were also taken from the World Bank Development Indicators (World Bank 2010), whereas the English Speaking variable was taken from Bleakley and Chin (2004) and the dominant religion of a country from the World Christian Encyclopedia (2007). While these variables may not directly influence home institutions, they could possibly be correlated with country-of-origin institutional quality. As argued by Rodrik, Subramanian and Trebbi (2004), countries with better institutions have a higher GDP. According to Osili and Paulson (2008), the market capitalisation of a country is also normally higher in countries with strong institutions. The ability to speak English, they argued, can also be associated with a higher institutional quality in immigrants' home countries when these countries are former British colonies. In contrast, remittances received by immigrants' home countries can be negatively correlated with the quality of institutions (Osili & Paulson 2008). For example, demand for remittances may be high for countries with weak institutions due to limited formal sources of insurance and investment funds. The effect of religion on a country's

institutional quality, proposed by Stulz and Williams (2003), was also tested by adding a country's dominant religion.

Similarly to the study by Osili and Paulson (2008), the effect of each institutional characteristic on the variables of interest was examined separately. The reason for this is the high correlation between different measures of institutional quality. Institutional characteristics may vary from country to country; however, they are also highly correlated with each other, with the highest correlations observed between the Aggregate Governance Indicators, as indicated in Table A.4 in Appendix A[7].

The following sections present results grouped into two main categories. The first category presents the results of the estimations with the dependent variable being equity investment, and the second presents the results of the SRFRT model. Identical approaches were used for both models. The models were applied to the 2002, 2006 and combined datasets to investigate whether the financial risk-taking behaviour of immigrants is different from that of native-born residents. A significant difference was found, so the data were analysed to determine if institutional factors could possibly have caused it.

## 2.4 Equity investment: results and analysis

The goal of this chapter is to investigate the factors that affect immigrants' participation in the Australian financial markets. Any financial activity is accompanied by a financial risk; thus, the level of financial risk-taking in this study represents the intensity of financial behaviour. Financial risk-taking, in turn, can be defined by a household's disposition for relatively risky financial investments, such as investments in the share market. Accordingly, this section examines the financial risk-taking behaviour of Australian residents represented by their participation in the Australian share market. It is first investigated what determines the decision of Australian residents to participate in the share market, and whether the probability of buying shares by immigrants differs from that of native-born Australians. Then the role of immigrants' home institutions in causing any difference in their share market participation is examined.

[7] The correlation coefficients range from 0.734 between Political Stability and Voice and Accountability to 0.999 between Government Effectiveness and Control of Corruption.

### 2.4.1 Difference in equity investment between immigrants and native-born individuals

The analysis of the determinants of stock market participation was carried out by applying probit model (2.1) to 2002 and 2006 data, excluding the institutional variables[8] and including a dummy which is equal to 1 if an individual was born in Australia and 0 otherwise. The random effects logit model with the same independent variables was used for estimating the panel data model as the more complicated probit model failed to converge. The results of this exercise are presented in Table 2.3.

**Table 2.3 Factors affecting the probability of equity investment by Australian residents (aged 15 or older)**

| VARIABLES | 2002 | 2006[9] | Panel data |
|---|---|---|---|
| Age | 0.0167*** | 0.00631 | 0.0381*** |
| | (0.00413) | (0.00409) | (0.0101) |
| $Age^2$ | -0.0001** | 0.0000225 | -0.000189* |
| | (0.0000419) | (0.0000414) | (0.000103) |
| Wealth | 0.00887*** | 0.00493*** | 0.0214*** |
| | (0.000261) | (0.000052) | (0.000621) |
| Income | -0.0155** | -0.0188*** | -0.0766*** |
| | (0.00701) | (0.00694) | (0.0154) |
| **Employment status (Employed = base case):** | | | |
| Unemployed | -0.473*** | -0.336*** | -0.873*** |
| | (0.0682) | (0.0762) | (0.151) |
| Not in labour force | -0.220*** | -0.185*** | -0.545*** |
| | (0.0335) | (0.0350) | (0.0785) |
| **Level of highest education achieved (No post-school qualification = base case):** | | | |
| Bachelor degree or higher | 0.0941*** | 0.0861*** | 0.206*** |
| | (0.0289) | (0.0293) | (0.0738) |
| Other post-school qualification | 0.374*** | 0.302*** | 1.043*** |
| | (0.0340) | (0.0330) | (0.0883) |
| Gender (1 if male) | -0.0188 | 0.00394 | 0.0276 |
| | (0.0247) | (0.0245) | (0.0645) |
| **Marital status (Married = base case):** | | | |
| Previously married | -0.331*** | -0.319*** | -0.953*** |
| | (0.0375) | (0.0390) | (0.0946) |
| Never been married | -0.0598 | -0.0926** | -0.320*** |
| | (0.0397) | (0.0405) | (0.0934) |
| No. of children | -0.0163 | -0.0796*** | -0.138*** |
| | (0.0138) | (0.0153) | (0.0348) |
| **Born in Australia** | 0.244*** | 0.253*** | 0.809*** |
| | (0.0294) | (0.0299) | (0.0802) |
| Constant | -0.886*** | -0.667*** | -2.190*** |
| | (0.112) | (0.111) | (0.268) |
| Observations | 13005 | 12853 | 25858 |
| Log likelihood | -7563 | -7582 | -13954 |
| Pseudo R-squared | 0.150 | 0.127 | |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. The sample is limited to individuals aged 15 or older who have non-missing data on country of origin. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

[8] Country of origin variables controlling for the quality of institutions were not included since Australian-born individuals form the majority of the sample.

[9] The convergence of the 2006 model was achieved when the Berndt-Hall-Hall-Hausman algorithm was used for likelihood function maximisation instead of the default Newton-Raphson algorithm.

The coefficients for all three regressions are similar except that, unlike in the other two cases, a negative effect from having resident children is not significant in 2002. Additionally, the age factor does not play any role in defining a household's investment strategy in 2006, whereas in 2002 and when panel data are used, older individuals are associated with a higher participation in the Australian share market, peaking at the age of 84. However, the probability of investing in the share market in 2006, unlike in 2002, decreases when the number of resident children increases.

A similar probit model is applied to a more specific dataset which excludes individuals aged 35 and younger. As older individuals are more likely to have a stable job and a permanent home, additional variables describing occupation types and household location have been included. These variables were not significant when the whole data set was used, most probably because the younger respondents have less settled careers and residences. Table 2.4 presents the results of this exercise.

These results confirm that individuals born outside Australia have a lower propensity to invest in shares than native-born Australians. Both tables also suggest that a higher equity investment is associated with a higher level of wealth. As expected, people in a committed relationship report a higher participation in the stock market than others, and individuals who have no post-school qualification do not invest as much as those who have at least some post-school education. Understandably, unemployed people do not have as many resources as their employed counterparts to buy equities. The gender of the respondents does not play a significant role in affecting the equity investment decisions in 2006 in either table. Positive age affect is more prominent when a younger generation is excluded from the dataset. The negative effect of having an additional resident child is present in 2006 estimates only, and its borderline significant positive effect detected in 2002 in the 36+ dataset estimates can be ignored.

Compared to Table 2.3, additional parameters defining occupational status and household location are reported in Table 2.4. These factors affect equity investment in different ways. For example, associate professionals, tradespersons, advanced clerical workers and labourers have a lower probability of holding equities than managers and administrators in 2006 and the combined dataset. The fact that there is no evident difference in the equity investment

between representatives of various occupations in 2002[10], but there is a presence of the gender effect in this year, could be explained by an inefficiency of the estimates caused by possible collinearity between occupation and gender. Even though there are expectations of declining occupational sex segregation, there are still many occupations in Australia that reflect historical gender roles (Preston & Whitehouse 2004). In addition, residents of households located in major urban regions are more likely to invest in equities than households in other urban regions in both periods. However, the probability of them investing in equities does not differ from that of rural area residents.

The income effect on the probability of holding shares by individuals from the 15+ and 36+ samples is different, possibly due to the varying spending priorities of people across generations. For example, the negative effect in the first dataset could be due to young individuals spending on life-style choices rather than investment. Priorities though change with age; hence, there is a positive correlation of income and equity investment in the 36+ sample.

[10] The difference in equity investment participation between managers and administrators, tradespersons and advanced clerical workers is borderline significant in 2002, and thus can be ignored.

## Table 2.4 Factors affecting the probability of equity investment by Australian residents (aged 36 or older)

| VARIABLES | 2002 | 2006 | Panel data |
|---|---|---|---|
| Age | 0.0490*** | 0.0356*** | 0.103*** |
| | (0.0109) | (0.0104) | (0.0271) |
| $Age^2$ | -0.000367*** | -0.000217** | -0.000737*** |
| | (0.0000908) | (0.0000851) | (0.000226) |
| Wealth | 0.00842*** | 0.00360*** | 0.0169*** |
| | (0.000340) | (0.000182) | (0.000747) |
| Income | 0.0568*** | 0.0836*** | 0.128*** |
| | (0.0122) | (0.0139) | (0.0288) |
| **Employment status (Employed = base case):** | | | |
| Unemployed | -0.512*** | -0.556*** | -1.251*** |
| | (0.124) | (0.141) | (0.289) |
| Not in labour force | -0.218*** | -0.247*** | -0.782*** |
| | (0.0747) | (0.0729) | (0.176) |
| **Occupation (Managers and administrators = base case):** | | | |
| Professionals | 0.00597 | -0.0635 | -0.108 |
| | (0.0767) | (0.0728) | (0.177) |
| Associate professionals | 0.00552 | -0.156** | -0.323* |
| | (0.0829) | (0.0791) | (0.188) |
| Trades persons | -0.163* | -0.235*** | -0.734*** |
| | (0.0877) | (0.0862) | (0.210) |
| Elementary clerical workers | 0.0866 | 0.0910 | -0.0135 |
| | (0.121) | (0.119) | (0.282) |
| Intermediate clerical workers | -0.0357 | -0.0596 | -0.304 |
| | (0.0825) | (0.0784) | (0.190) |
| Advanced clerical workers | -0.159* | -0.285*** | -0.888*** |
| | (0.0950) | (0.0933) | (0.227) |
| Production workers | -0.0767 | -0.0366 | -0.326 |
| | (0.105) | (0.107) | (0.246) |
| Labourers and related workers | -0.122 | -0.387*** | -0.851*** |
| | (0.0972) | (0.0969) | (0.226) |
| **Level of highest education achieved (No post-school qualification = base case):** | | | |
| Bachelor degree or higher | 0.155*** | 0.160*** | 0.459*** |
| | (0.0360) | (0.0356) | (0.0967) |
| Other post-school qualification | 0.289*** | 0.281*** | 1.021*** |
| | (0.0485) | (0.0467) | (0.130) |
| Gender (1 if male) | -0.0688** | -0.0470 | -0.112 |
| | (0.0338) | (0.0335) | (0.0908) |
| **Marital status (Married = base case):** | | | |
| Previously married | -0.361*** | -0.407*** | -1.203*** |
| | (0.0404) | (0.0403) | (0.106) |
| Never been married | -0.224*** | -0.287*** | -0.950*** |
| | (0.0630) | (0.0609) | (0.167) |
| No. of children | 0.0364* | -0.0485** | -0.0300 |
| | (0.0194) | (0.0209) | (0.0500) |
| **Location of household (Major urban =base case):** | | | |
| Other urban | -0.160*** | -0.140*** | -0.561*** |
| | (0.0521) | (0.0504) | (0.135) |
| Bounded locality | -0.00835 | -0.104 | -0.301 |
| | (0.0846) | (0.0866) | (0.222) |
| Rural balance | -0.0856 | -0.0436 | -0.271* |
| | (0.0599) | (0.0562) | (0.150) |
| **Born in Australia** | 0.249*** | 0.284*** | 0.898*** |
| | (0.0349) | (0.0352) | (0.0986) |
| Constant | -2.467*** | -2.297*** | -5.306*** |
| | (0.349) | (0.350) | (0.867) |
| Observations | 8286 | 8132 | 16418 |
| Log likelihood | -4819 | -4867 | -8902 |
| Pseudo R-squared | 0.160 | 0.131 | |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. The sample is limited to individuals aged 36 or older who have non-missing data on country of origin. Occupation and household location variables are added to account for specifics of a more mature generation compared to individuals aged 15 or older. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1

The main conclusion drawn from the tables above is that even when controlling for personal characteristics, immigrants are less likely than native-born Australians to invest in equities. Equity investment depends on a number of personal characteristics including age, wealth, income, education, employment status and marital status. The nature of the effects of these variables can be explained by their effects on household wealth, which, in turn, affects the amount allocated for equities. However, the explanation of the different equity investments for Australian-born and foreign-born individuals is not so clear. Osili and Paulson (2008) argued that home institutions affect participation in the stock market by US immigrants; thus, an institutional effect could also be the cause of the difference in Australia. The next section analyses whether immigrants' propensity to invest in equities is affected by their home-country institutions and to what extent.

As before, the estimation of the institutional effect on the equity investment by immigrants in 2002 and 2006 used the probit model. This model was selected to allow direct comparison with the results obtained by Osili and Paulson (2008). Similarly, the random effect logit model was used for estimating the panel data. Since the results obtained from using the different samples restricted by age provide similar results, the 15+ data sample was used as the main set hereafter due to its larger size, which allows narrowing the data to the immigrant-only sample. The results were also compared to those obtained using the 36+ data for a more extensive analysis.

### 2.4.2 Equity investment and institutional quality: baseline findings

The relationship between equity investment in 2002 and immigrants' personal attributes and their country-of-birth characteristics is explored in Table 2.5 (Panel A). These findings on the whole confirm the results obtained by Osili and Paulson (2008) for the US. In particular, almost all institutional qualities have a positive and significant influence on stock market participation. The two exceptions are enrolment in secondary school and geographic latitude, which do not have statistically significant coefficients.

The estimation of the models applied to the 2006 data and panel data provides similar results (Panel B and Panel C of Table 2.5). The last panel presents the results from estimating the home institutional effect on equity investment by immigrants aged 36 and over (Table 2.5

[Panel D]). Since the positive effects of geographic latitude and school enrolment have become borderline significant only for older individuals, it is safe to conclude that country-of-origin latitude and enrolment in secondary school are not major factors in Australian immigrants' appetite for stock market investment.

This differs from the results obtained by Osili and Paulson (2008) for the US data. The insignificance of geographic latitude's effect on the stock market investment in Australia compared to the positive effect in the US can be explained by the different geographic patterns of migration to both countries. Similarly, education, represented here by the ratio of children of official school age who are enrolled in school to the population of the corresponding official school age in the reported year, does not seem to be important in the equity investment decisions of Australian immigrants. However, there is a positive impact of average years of schooling in 1960 on an immigrant's ability to own stock in the US (Osili & Paulson 2008). That could possibly be related to the fact that between 1960 and the early 2000s the proportion of children enrolled in schools worldwide dramatically increased. For example, Rogers (2008) argued that, compared to 1960, by 2000 there was a more than three times increase in the average years of schooling in developing countries. Hence, improved secondary education worldwide makes this criterion less significant in the 21st century. Alternatively, that could mean that participation in the stock market depends on the number of years of tertiary education only.

Among the institutional characteristics used in the estimation, Rule of Law is one of the most popular measures of institutional quality. Furthermore, the results obtained here show that it has a high significance and positive impact on the equity investment decision. Thus, this variable was used as a representative measure for further examination.

## Table 2.5 Quality of institutions' effect on the probability of equity investment by immigrants

### Panel A) 2002 data (individuals aged 15 or older)

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Age | 0.0202** | 0.0193** | 0.0196** | 0.0196** | 0.0194** | 0.0196** | 0.0234** | 0.0216** | 0.0412*** | 0.0210** |
| | (0.00951) | (0.00951) | (0.00951) | (0.00951) | (0.00951) | (0.00951) | (0.00962) | (0.00961) | (0.0112) | (0.00977) |
| $Age^2$ | -0.000155* | -0.000138 | -0.000150 | -0.000150 | -0.000145 | -0.000149 | -0.000181* | -0.000156* | -0.000310*** | -0.000164* |
| | (0.0000932) | (0.0000930) | (0.0000932) | (0.0000932) | (0.0000931) | (0.0000931) | (0.000943) | (0.0000941) | (0.000108) | (0.0000956) |
| Wealth | 0.00909*** | 0.00913*** | 0.00900*** | 0.00900*** | 0.00905*** | 0.00909*** | 0.00896*** | 0.00905*** | 0.00798*** | 0.00875*** |
| | (0.000556) | (0.000555) | (0.000556) | (0.000556) | (0.000556) | (0.000556) | (0.000557) | (0.000559) | (0.000609) | (0.000560) |
| Income | 0.0129 | 0.0137 | 0.0112 | 0.0112 | 0.0117 | 0.0122 | 0.0150 | 0.0185 | 0.0104 | 0.0195 |
| | (0.0154) | (0.0154) | (0.0154) | (0.0154) | (0.0154) | (0.0154) | (0.0155) | (0.0156) | (0.0190) | (0.0163) |
| **Employment status ( Employed = base case):** | | | | | | | | | | |
| Unemployed | -0.472*** | -0.472*** | -0.463*** | -0.463*** | -0.465*** | -0.465*** | -0.478*** | -0.472*** | -0.374** | -0.439*** |
| | (0.141) | (0.140) | (0.141) | (0.141) | (0.141) | (0.141) | (0.145) | (0.143) | (0.171) | (0.146) |
| Not in labour force | -0.159** | -0.178** | -0.165** | -0.165** | -0.170** | -0.166** | -0.162** | -0.187*** | -0.243*** | -0.166** |
| | (0.0705) | (0.0701) | (0.0703) | (0.0703) | (0.0702) | (0.0703) | (0.0711) | (0.0708) | (0.0838) | (0.0737) |
| **Level of highest education achieved (No post-school qualification = base case):** | | | | | | | | | | |
| Bachelor degree or higher | 0.161*** | 0.168*** | 0.153** | 0.153** | 0.160*** | 0.158*** | 0.156** | 0.176*** | 0.165** | 0.158** |
| | (0.0607) | (0.0605) | (0.0607) | (0.0607) | (0.0606) | (0.0607) | (0.0614) | (0.0612) | (0.0702) | (0.0624) |
| Other post-school qualification | 0.484*** | 0.481*** | 0.482*** | 0.482*** | 0.483*** | 0.483*** | 0.449*** | 0.459*** | 0.464*** | 0.457*** |
| | (0.0662) | (0.0663) | (0.0662) | (0.0662) | (0.0662) | (0.0662) | (0.0669) | (0.0668) | (0.0803) | (0.0682) |
| Gender (1 if male) | -0.0786 | -0.0805 | -0.0780 | -0.0780 | -0.0802 | -0.0781 | -0.0826 | -0.0774 | -0.0807 | -0.0746 |
| | (0.0525) | (0.0525) | (0.0525) | (0.0525) | (0.0525) | (0.0525) | (0.0531) | (0.0529) | (0.0626) | (0.0541) |
| **Marital status (Married = base case):** | | | | | | | | | | |
| Previously married | -0.293*** | -0.292*** | -0.292*** | -0.292*** | -0.293*** | -0.291*** | -0.287*** | -0.291*** | -0.309*** | -0.269*** |
| | (0.0771) | (0.0771) | (0.0772) | (0.0772) | (0.0771) | (0.0771) | (0.0779) | (0.0777) | (0.0874) | (0.0784) |
| Never been married | 0.0853 | 0.0756 | 0.0887 | 0.0887 | 0.0842 | 0.0868 | 0.0753 | 0.0709 | 0.126 | 0.0743 |
| | (0.0958) | (0.0958) | (0.0958) | (0.0958) | (0.0957) | (0.0958) | (0.0969) | (0.0969) | (0.112) | (0.0987) |
| No. of children | -0.00139 | 0.000621 | 0.00260 | 0.00260 | -0.000124 | 0.00105 | -0.00787 | -0.00864 | -0.00758 | 0.00678 |
| | (0.0302) | (0.0304) | (0.0303) | (0.0303) | (0.0302) | (0.0303) | (0.0307) | (0.0306) | (0.0374) | (0.0324) |
| **Qualities of country-of-origin institutions:** | | | | | | | | | | |
| Voice & Accountability | 0.433*** | | | | | | | | | |
| | (0.116) | | | | | | | | | |
| Political Stability | | 0.257** | | | | | | | | |
| | | (0.126) | | | | | | | | |
| Government Effectiveness | | | 0.545*** | | | | | | | |
| | | | (0.121) | | | | | | | |
| Control of Corruption | | | | 0.545*** | | | | | | |
| | | | | (0.121) | | | | | | |
| Rule of Law | | | | | 0.419*** | | | | | |
| | | | | | (0.115) | | | | | |
| Regulatory Quality | | | | | | 0.467*** | | | | |
| | | | | | | (0.116) | | | | |
| British Legal | | | | | | | 0.279*** | | | |
| | | | | | | | (0.0525) | | | |
| Latitude | | | | | | | | -0.0796 | | |
| | | | | | | | | (0.152) | | |
| School Enrolment | | | | | | | | | -0.00168 | |
| | | | | | | | | | (0.00204) | |
| Constraint on Executive | | | | | | | | | | 0.0688*** |
| | | | | | | | | | | (0.0205) |
| Constant | -1.925*** | -1.654*** | -2.086*** | -2.086*** | -1.884*** | -1.967*** | -1.530*** | -1.364*** | -1.593*** | -1.778*** |
| | (0.305) | (0.306) | (0.310) | (0.310) | (0.300) | (0.304) | (0.265) | (0.265) | (0.339) | (0.295) |
| Observations | 3070 | 3062 | 3073 | 3073 | 3073 | 3073 | 2998 | 2995 | 2180 | 2874 |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. Standard errors are indicated in parentheses. All models passed the LR Chi-Square test, with the LR statistic ranging from 443.4 to 664.2 and the pseudo R-squared ranging from 0.152 to 0.163. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

## Panel B) 2006 data (individuals aged 15 or older)

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Age | -0.00183 | -0.00184 | -0.00225 | -0.00225 | -0.00247 | -0.00226 | 0.000768 | 0.000211 | 0.00350 | -0.00307 |
| | (0.00995) | (0.00995) | (0.00995) | (0.00995) | (0.00995) | (0.00995) | (0.0100) | (0.0100) | (0.0124) | (0.0101) |
| $Age^2$ | 0.0000779 | 0.000085 | 0.0000818 | 0.0000818 | 0.0000824 | 0.0000818 | 0.0000636 | 0.0000669 | 0.0000756 | 0.0000879 |
| | (0.000963) | (0.0000962) | (0.0000963) | (0.0000963) | (0.0000963) | (0.0000962) | (0.000097) | (0.0000969) | (0.000117) | (0.0000972) |
| Wealth | 0.00437*** | 0.00437*** | 0.00436*** | 0.00436*** | 0.00437*** | 0.00438*** | 0.00432*** | 0.00433*** | 0.00326*** | 0.00431*** |
| | (0.000331) | (0.000331) | (0.000332) | (0.000332) | (0.000332) | (0.000332) | (0.000332) | (0.000332) | (0.000366) | (0.000333) |
| Income | 0.0334* | 0.0326* | 0.0325* | 0.0325* | 0.0325* | 0.0330* | 0.0322* | 0.0331* | 0.0442* | 0.0337* |
| | (0.0176) | (0.0176) | (0.0176) | (0.0176) | (0.0176) | (0.0176) | (0.0178) | (0.0178) | (0.0235) | (0.0184) |
| **Employment status ( Employed = base case):** | | | | | | | | | | |
| Unemployed | -0.394** | -0.418** | -0.396** | -0.396** | -0.390** | -0.399** | -0.448** | -0.465** | -0.536** | -0.368* |
| | (0.190) | (0.190) | (0.190) | (0.190) | (0.190) | (0.190) | (0.193) | (0.193) | (0.273) | (0.193) |
| Not in labour force | -0.221*** | -0.226*** | -0.218*** | -0.218*** | -0.215*** | -0.222*** | -0.202*** | -0.218*** | -0.286*** | -0.225*** |
| | (0.0755) | (0.0754) | (0.0756) | (0.0756) | (0.0756) | (0.0755) | (0.0762) | (0.0759) | (0.0927) | (0.0768) |
| **Level of highest education achieved (No post-school qualification = base case):** | | | | | | | | | | |
| Bachelor degree or higher | 0.0675 | 0.0759 | 0.0627 | 0.0627 | 0.0655 | 0.0677 | 0.0717 | 0.0771 | 0.114 | 0.0807 |
| | (0.0640) | (0.0638) | (0.0640) | (0.0640) | (0.0639) | (0.0639) | (0.0644) | (0.0644) | (0.0782) | (0.0647) |
| Other post-school qualification | 0.328*** | 0.323*** | 0.316*** | 0.316*** | 0.319*** | 0.319*** | 0.318*** | 0.324*** | 0.329*** | 0.334*** |
| | (0.0679) | (0.0678) | (0.0678) | (0.0678) | (0.0678) | (0.0678) | (0.0682) | (0.0683) | (0.0861) | (0.0693) |
| Gender (1 if male) | -0.0470 | -0.0424 | -0.0413 | -0.0413 | -0.0439 | -0.0427 | -0.0486 | -0.0438 | -0.123* | -0.0438 |
| | (0.0544) | (0.0543) | (0.0544) | (0.0544) | (0.0544) | (0.0543) | (0.0548) | (0.0548) | (0.0680) | (0.0553) |
| **Marital status (Married = base case):** | | | | | | | | | | |
| Previously married | -0.237*** | -0.231*** | -0.231*** | -0.231*** | -0.230*** | -0.231*** | -0.244*** | -0.242*** | -0.248*** | -0.225*** |
| | (0.0768) | (0.0767) | (0.0768) | (0.0768) | (0.0768) | (0.0767) | (0.0776) | (0.0776) | (0.0913) | (0.0774) |
| Never been married | -0.0537 | -0.0599 | -0.0578 | -0.0578 | -0.0566 | -0.0596 | -0.0523 | -0.0412 | 0.0864 | -0.0501 |
| | (0.101) | (0.101) | (0.101) | (0.101) | (0.101) | (0.101) | (0.101) | (0.101) | (0.133) | (0.103) |
| No. of children | -0.0253 | -0.0270 | -0.0244 | -0.0244 | -0.0271 | -0.0260 | -0.0342 | -0.0295 | -0.00768 | -0.0224 |
| | (0.0345) | (0.0344) | (0.0345) | (0.0345) | (0.0345) | (0.0344) | (0.0345) | (0.0345) | (0.0434) | (0.0350) |
| **Qualities of country-of-origin institutions:** | | | | | | | | | | |
| Voice & Accountability | 0.500*** | | | | | | | | | |
| | (0.116) | | | | | | | | | |
| Political Stability | | 0.348*** | | | | | | | | |
| | | (0.115) | | | | | | | | |
| Government Effectiveness | | | 0.584*** | | | | | | | |
| | | | (0.127) | | | | | | | |
| Control of Corruption | | | | 0.584*** | | | | | | |
| | | | | (0.127) | | | | | | |
| Rule of Law | | | | | 0.557*** | | | | | |
| | | | | | (0.119) | | | | | |
| Regulatory Quality | | | | | | 0.498*** | | | | |
| | | | | | | (0.121) | | | | |
| British Legal | | | | | | | 0.168*** | | | |
| | | | | | | | (0.0553) | | | |
| Latitude | | | | | | | | 0.160 | | |
| | | | | | | | | (0.157) | | |
| School Enrolment | | | | | | | | | 0.00350 | |
| | | | | | | | | | (0.00259) | |
| Constraint on Executive | | | | | | | | | | 0.0721*** |
| | | | | | | | | | | (0.0211) |
| Constant | -1.663*** | -1.422*** | -1.805*** | -1.805*** | -1.739*** | -1.671*** | -1.086*** | -1.055*** | -1.522*** | -1.342*** |
| | (0.324) | (0.317) | (0.335) | (0.335) | (0.327) | (0.329) | (0.288) | (0.289) | (0.414) | (0.319) |
| Observations | 2714 | 2714 | 2717 | 2717 | 2717 | 2717 | 2660 | 2657 | 1726 | 2609 |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. Standard errors are indicated in parentheses. All models passed the LR Chi-Square test, with the LR statistic ranging from 222.3 to 430 and the pseudo R-squared ranging from 0.097 to 0.120.*** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

## Panel C) panel data (individuals aged 15 or older)

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Age | 0.0430* | 0.0398 | 0.0393 | 0.0393 | 0.0392 | 0.0405 | 0.0522** | 0.0484* | 0.0824*** | 0.0406 |
| | (0.0261) | (0.0262) | (0.0261) | (0.0261) | (0.0261) | (0.0260) | (0.0263) | (0.0264) | (0.0312) | (0.0266) |
| $Age^2$ | -0.000330 | -0.000273 | -0.000297 | -0.000297 | -0.000294 | -0.000306 | -0.000388 | -0.000352 | -0.000556* | -0.000308 |
| | (0.000255) | (0.000255) | (0.000254) | (0.000254) | (0.000254) | (0.000253) | (0.000257) | (0.000257) | (0.000297) | (0.000258) |
| Wealth | 0.0221*** | 0.0223*** | 0.0220*** | 0.0220*** | 0.0221*** | 0.0221*** | 0.0217*** | 0.0218*** | 0.0183*** | 0.0215*** |
| | (0.00143) | (0.00143) | (0.00143) | (0.00143) | (0.00143) | (0.00143) | (0.00142) | (0.00143) | (0.00158) | (0.00143) |
| Income | 0.0274 | 0.0285 | 0.0244 | 0.0244 | 0.0247 | 0.0258 | 0.0318 | 0.0355 | 0.0574 | 0.0469 |
| | (0.0384) | (0.0384) | (0.0383) | (0.0383) | (0.0382) | (0.0382) | (0.0386) | (0.0388) | (0.0494) | (0.0404) |
| **Employment status ( Employed = base case):** | | | | | | | | | | |
| Unemployed | -0.904** | -0.927** | -0.898** | -0.898** | -0.894** | -0.902** | -0.972*** | -0.993*** | -0.880* | -0.850** |
| | (0.363) | (0.363) | (0.363) | (0.363) | (0.362) | (0.361) | (0.370) | (0.370) | (0.468) | (0.373) |
| Not in labour force | -0.484*** | -0.522*** | -0.490*** | -0.490*** | -0.492*** | -0.498*** | -0.469*** | -0.526*** | -0.752*** | -0.534*** |
| | (0.178) | (0.178) | (0.178) | (0.178) | (0.177) | (0.177) | (0.178) | (0.179) | (0.218) | (0.183) |
| **Level of highest education achieved (No post-school qualification = base case):** | | | | | | | | | | |
| Bachelor degree or higher | 0.315* | 0.349** | 0.294* | 0.294* | 0.311* | 0.314* | 0.304* | 0.346** | 0.401** | 0.348** |
| | (0.173) | (0.173) | (0.173) | (0.173) | (0.172) | (0.172) | (0.174) | (0.174) | (0.203) | (0.176) |
| Other post-school | 1.300*** | 1.301*** | 1.268*** | 1.268*** | 1.276*** | 1.267*** | 1.204*** | 1.255*** | 1.335*** | 1.255*** |
| qualification | (0.192) | (0.193) | (0.191) | (0.191) | (0.191) | (0.190) | (0.192) | (0.193) | (0.238) | (0.196) |
| Gender (1 if male) | -0.125 | -0.125 | -0.115 | -0.115 | -0.123 | -0.116 | -0.141 | -0.116 | -0.260 | -0.122 |
| | (0.151) | (0.151) | (0.151) | (0.151) | (0.150) | (0.150) | (0.152) | (0.152) | (0.181) | (0.154) |
| **Marital status (Married = base case):** | | | | | | | | | | |
| Previously married | -0.790*** | -0.784*** | -0.771*** | -0.771*** | -0.772*** | -0.771*** | -0.796*** | -0.807*** | -0.832*** | -0.736*** |
| | (0.203) | (0.203) | (0.203) | (0.203) | (0.202) | (0.202) | (0.204) | (0.205) | (0.234) | (0.204) |
| Never been married | -0.182 | -0.203 | -0.181 | -0.181 | -0.185 | -0.190 | -0.199 | -0.195 | 0.148 | -0.208 |
| | (0.252) | (0.253) | (0.252) | (0.252) | (0.251) | (0.251) | (0.253) | (0.254) | (0.309) | (0.258) |
| No. of children | -0.0526 | -0.0537 | -0.0434 | -0.0434 | -0.0527 | -0.0508 | -0.0829 | -0.0755 | -0.0676 | -0.0555 |
| | (0.0835) | (0.0842) | (0.0836) | (0.0836) | (0.0834) | (0.0833) | (0.0843) | (0.0846) | (0.103) | (0.0871) |
| **Qualities of country-of-origin institutions:** | | | | | | | | | | |
| Voice & Accountability | 1.766*** | | | | | | | | | |
| | (0.330) | | | | | | | | | |
| Political Stability | | 1.309*** | | | | | | | | |
| | | (0.329) | | | | | | | | |
| Government Effectiveness | | | 2.153*** | | | | | | | |
| | | | (0.355) | | | | | | | |
| Control of Corruption | | | | 2.153*** | | | | | | |
| | | | | (0.355) | | | | | | |
| Rule of Law | | | | | 1.789*** | | | | | |
| | | | | | (0.332) | | | | | |
| Regulatory Quality | | | | | | 1.689*** | | | | |
| | | | | | | (0.335) | | | | |
| British Legal | | | | | | | 0.832*** | | | |
| | | | | | | | (0.155) | | | |
| Latitude | | | | | | | | 0.428 | | |
| | | | | | | | | (0.437) | | |
| School Enrolment | | | | | | | | | 0.00602 | |
| | | | | | | | | | (0.00619) | |
| Constraint on Executive | | | | | | | | | | 0.269*** |
| | | | | | | | | | | (0.0579) |
| Constant | -5.989*** | -5.242*** | -6.571*** | -6.571*** | -5.954*** | -5.864*** | -4.108*** | -3.811*** | -5.127*** | -5.152*** |
| | (0.849) | (0.832) | (0.879) | (0.879) | (0.845) | (0.850) | (0.720) | (0.723) | (0.985) | (0.814) |
| Observations | 5784 | 5776 | 5790 | 5790 | 5790 | 5790 | 5658 | 5652 | 3906 | 5483 |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. Standard errors are indicated in parentheses. All models passed the Wald Chi-Square test, with the Wald statistic ranging from 245.8 to 402.8. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

## Panel D) panel data (individuals aged 36 or older)

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Age | 0.0429 | 0.0442 | 0.0423 | 0.0423 | 0.0411 | 0.0404 | 0.0657 | 0.0465 | 0.110* | 0.0323 |
| | (0.0569) | (0.0572) | (0.0570) | (0.0570) | (0.0568) | (0.0566) | (0.0572) | (0.0575) | (0.0669) | (0.0572) |
| $Age^2$ | -0.000348 | -0.000336 | -0.000347 | -0.000347 | -0.000337 | -0.000324 | -0.000520 | -0.000373 | -0.000802 | -0.000252 |
| | (0.000474) | (0.000476) | (0.000475) | (0.000475) | (0.000473) | (0.000471) | (0.000476) | (0.000479) | (0.000549) | (0.000475) |
| Wealth | 0.0198*** | 0.0199*** | 0.0196*** | 0.0196*** | 0.0196*** | 0.0197*** | 0.0194*** | 0.0194*** | 0.0162*** | 0.0194*** |
| | (0.00161) | (0.00162) | (0.00161) | (0.00161) | (0.00161) | (0.00161) | (0.00160) | (0.00160) | (0.00173) | (0.00160) |
| Income | 0.193*** | 0.197*** | 0.188*** | 0.188*** | 0.187*** | 0.189*** | 0.190*** | 0.199*** | 0.204*** | 0.210*** |
| | (0.0575) | (0.0578) | (0.0575) | (0.0575) | (0.0573) | (0.0573) | (0.0574) | (0.0583) | (0.0682) | (0.0591) |
| **Employment status ( Employed = base case):** | | | | | | | | | | |
| Unemployed | -1.251** | -1.270** | -1.211** | -1.211** | -1.218** | -1.239** | -1.302** | -1.334** | -1.553** | -1.215** |
| | (0.569) | (0.572) | (0.570) | (0.570) | (0.569) | (0.567) | (0.580) | (0.583) | (0.700) | (0.579) |
| Not in labour force | -0.819** | -0.852** | -0.794** | -0.794** | -0.798** | -0.832** | -0.678* | -0.795** | -1.020** | -0.803** |
| | (0.382) | (0.384) | (0.383) | (0.383) | (0.382) | (0.381) | (0.382) | (0.384) | (0.454) | (0.383) |
| **Occupation (Managers and administrators = base case):** | | | | | | | | | | |
| Professionals | -0.308 | -0.341 | -0.329 | -0.329 | -0.329 | -0.317 | -0.230 | -0.250 | -0.227 | -0.186 |
| | (0.381) | (0.384) | (0.382) | (0.382) | (0.381) | (0.380) | (0.380) | (0.383) | (0.457) | (0.381) |
| Associate professionals | -0.790* | -0.817** | -0.786* | -0.786* | -0.794** | -0.789* | -0.668* | -0.762* | -0.418 | -0.705* |
| | (0.404) | (0.407) | (0.405) | (0.405) | (0.404) | (0.403) | (0.403) | (0.406) | (0.477) | (0.407) |
| Trades Persons | -1.105** | -1.145** | -1.072** | -1.072** | -1.076** | -1.108** | -1.008** | -1.151** | -0.931* | -1.089** |
| | (0.450) | (0.452) | (0.451) | (0.451) | (0.449) | (0.448) | (0.450) | (0.454) | (0.539) | (0.453) |
| Elementary clerical workers | -0.773 | -0.768 | -0.764 | -0.764 | -0.755 | -0.766 | -0.596 | -0.611 | -0.432 | -0.658 |
| | (0.646) | (0.650) | (0.649) | (0.649) | (0.647) | (0.645) | (0.653) | (0.654) | (0.773) | (0.660) |
| Intermediate clerical | -0.109 | -0.0770 | -0.0753 | -0.0753 | -0.0869 | -0.109 | -0.0570 | -0.0935 | -0.160 | -0.0148 |
| workers | (0.412) | (0.415) | (0.412) | (0.412) | (0.412) | (0.410) | (0.411) | (0.414) | (0.492) | (0.413) |
| Advanced clerical workers | -0.715 | -0.723 | -0.635 | -0.635 | -0.654 | -0.690 | -0.602 | -0.668 | -0.328 | -0.614 |
| | (0.508) | (0.510) | (0.509) | (0.509) | (0.508) | (0.506) | (0.508) | (0.512) | (0.612) | (0.512) |
| Production workers | 0.218 | 0.210 | 0.265 | 0.265 | 0.267 | 0.238 | 0.389 | 0.308 | 0.286 | 0.351 |
| | (0.531) | (0.534) | (0.532) | (0.532) | (0.531) | (0.530) | (0.534) | (0.539) | (0.653) | (0.540) |
| Labourers and related | -1.073** | -1.110** | -1.030** | -1.030** | -1.044** | -1.071** | -0.858* | -0.975** | -0.741 | -1.098** |
| workers | (0.486) | (0.489) | (0.486) | (0.486) | (0.485) | (0.484) | (0.487) | (0.491) | (0.587) | (0.489) |
| **Level of highest education achieved (No post-school qualification = base case):** | | | | | | | | | | |
| Bachelor degree or higher | 0.626*** | 0.668*** | 0.603*** | 0.603*** | 0.616*** | 0.627*** | 0.600*** | 0.655*** | 0.759*** | 0.643*** |
| | (0.203) | (0.204) | (0.203) | (0.203) | (0.202) | (0.201) | (0.203) | (0.205) | (0.238) | (0.204) |
| Other post-school | 1.469*** | 1.546*** | 1.487*** | 1.487*** | 1.493*** | 1.458*** | 1.372*** | 1.450*** | 1.575*** | 1.381*** |
| qualification | (0.255) | (0.260) | (0.256) | (0.256) | (0.256) | (0.254) | (0.254) | (0.258) | (0.312) | (0.257) |
| Gender (1 if male) | -0.273 | -0.278 | -0.268 | -0.268 | -0.271 | -0.265 | -0.261 | -0.252 | -0.441** | -0.259 |
| | (0.185) | (0.187) | (0.186) | (0.186) | (0.185) | (0.184) | (0.186) | (0.187) | (0.219) | (0.186) |
| **Marital status (Married = base case):** | | | | | | | | | | |
| Previously married | -1.002*** | -0.989*** | -0.981*** | -0.981*** | -0.981*** | -0.977*** | -0.981*** | -1.005*** | -1.002*** | -0.922*** |
| | (0.223) | (0.224) | (0.223) | (0.223) | (0.222) | (0.221) | (0.223) | (0.224) | (0.258) | (0.222) |
| Never been married | -0.0311 | 0.00338 | -0.0351 | -0.0351 | -0.0364 | -0.0253 | -0.0801 | -0.00591 | 0.171 | -0.00528 |
| | (0.401) | (0.403) | (0.400) | (0.400) | (0.399) | (0.397) | (0.402) | (0.407) | (0.461) | (0.407) |
| No. of children | 0.00406 | 0.00558 | 0.0176 | 0.0176 | 0.00795 | 0.00255 | -0.00143 | -0.00688 | 0.00953 | -0.00644 |
| | (0.109) | (0.109) | (0.109) | (0.109) | (0.108) | (0.108) | (0.110) | (0.110) | (0.132) | (0.112) |
| **Location of household (Major urban = base case):** | | | | | | | | | | |
| Other urban | -0.703** | -0.665** | -0.748** | -0.748** | -0.733** | -0.698** | -0.724** | -0.671** | -0.789** | -0.672** |
| | (0.303) | (0.304) | (0.304) | (0.304) | (0.303) | (0.302) | (0.303) | (0.306) | (0.353) | (0.304) |
| Bounded locality | 0.355 | 0.416 | 0.307 | 0.307 | 0.321 | 0.359 | 0.239 | 0.384 | 0.213 | 0.351 |
| | (0.541) | (0.544) | (0.543) | (0.543) | (0.541) | (0.539) | (0.537) | (0.541) | (0.597) | (0.535) |
| Rural balance | -0.276 | -0.206 | -0.276 | -0.276 | -0.270 | -0.255 | -0.286 | -0.249 | -0.269 | -0.330 |
| | (0.348) | (0.350) | (0.349) | (0.349) | (0.348) | (0.347) | (0.348) | (0.351) | (0.402) | (0.349) |

(continued on next page)

## Panel D) continued

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Qualities of country-of-origin institutions:** | | | | | | | | | | |
| Voice & Accountability | 1.679*** | | | | | | | | | |
| | (0.408) | | | | | | | | | |
| Political Stability | | 1.736*** | | | | | | | | |
| | | (0.427) | | | | | | | | |
| Government Effectiveness | | | 2.352*** | | | | | | | |
| | | | (0.440) | | | | | | | |
| Control of Corruption | | | | 2.352*** | | | | | | |
| | | | | (0.440) | | | | | | |
| Rule of Law | | | | | 2.019*** | | | | | |
| | | | | | (0.413) | | | | | |
| Regulatory Quality | | | | | | 1.579*** | | | | |
| | | | | | | (0.414) | | | | |
| British Legal | | | | | | | 0.890*** | | | |
| | | | | | | | (0.182) | | | |
| Latitude | | | | | | | | 1.003* | | |
| | | | | | | | | (0.528) | | |
| School Enrolment | | | | | | | | | 0.0130* | |
| | | | | | | | | | (0.00784) | |
| Constraint on Executive | | | | | | | | | | 0.204*** |
| | | | | | | | | | | (0.0714) |
| Constant | -6.849*** | -6.998*** | -7.953*** | -7.953*** | -7.317*** | -6.678*** | -5.610*** | -5.019*** | -7.413*** | -5.619*** |
| | (1.893) | (1.918) | (1.929) | (1.929) | (1.899) | (1.888) | (1.822) | (1.833) | (2.216) | (1.870) |
| Observations | 4401 | 4400 | 4405 | 4405 | 4405 | 4405 | 4296 | 4292 | 3082 | 4204 |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. Occupation and household location variables are added to account for specifics of a more matured generation compared to individuals aged 15 or older. Standard errors are indicated in parentheses. All models passed the Wald Chi-Square test, with the Wald statistic ranging from 203 to 320.1. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

**Table 2.6 Effects of additional country controls on the probability of equity investment by immigrants aged 15 or older (panel data)**

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| Age | 0.0392 | 0.0442* | 0.0408 | 0.0387 | 0.0417 | 0.0420 | 0.0369 | 0.0691** | 0.0728** |
| | (0.0261) | (0.0261) | (0.0261) | (0.0262) | (0.0262) | (0.0262) | (0.0262) | (0.0307) | (0.0315) |
| $Age^2$ | -0.000294 | -0.000319 | -0.000313 | -0.000284 | -0.000309 | -0.000336 | -0.000300 | -0.000480 | -0.000483 |
| | (0.000254) | (0.000253) | (0.000255) | (0.000255) | (0.000255) | (0.000254) | (0.000254) | (0.000293) | (0.000299) |
| Wealth | 0.0221*** | 0.0218*** | 0.0220*** | 0.0218*** | 0.0218*** | 0.0208*** | 0.0218*** | 0.0185*** | 0.0192*** |
| | (0.00143) | (0.00143) | (0.00143) | (0.00144) | (0.00144) | (0.00142) | (0.00148) | (0.00164) | (0.00169) |
| Income | 0.0247 | 0.0282 | 0.0257 | 0.0318 | 0.0276 | 0.0295 | 0.0320 | 0.0667 | 0.0749 |
| | (0.0382) | (0.0383) | (0.0385) | (0.0388) | (0.0388) | (0.0384) | (0.0384) | (0.0487) | (0.0500) |
| **Employment status (Employed = base case):** | | | | | | | | | |
| Unemployed | -0.894** | -0.882** | -0.876** | -0.869** | -0.883** | -0.791** | -0.804** | -0.757 | -0.837* |
| | (0.362) | (0.362) | (0.363) | (0.362) | (0.362) | (0.373) | (0.376) | (0.463) | (0.471) |
| Not in labour force | -0.492*** | -0.482*** | -0.479*** | -0.486*** | -0.468*** | -0.436** | -0.416** | -0.616*** | -0.660*** |
| | (0.177) | (0.177) | (0.178) | (0.178) | (0.179) | (0.179) | (0.179) | (0.215) | (0.220) |
| **Level of highest education achieved (No post-school qualification = base case):** | | | | | | | | | |
| Bachelor degree or | 0.311* | 0.293* | 0.306* | 0.314* | 0.311* | 0.272 | 0.263 | 0.232 | 0.247 |
| higher | (0.172) | (0.172) | (0.173) | (0.173) | (0.173) | (0.172) | (0.171) | (0.199) | (0.204) |
| Other post-school | 1.276*** | 1.195*** | 1.262*** | 1.266*** | 1.271*** | 1.188*** | 1.170*** | 1.166*** | 1.152*** |
| qualification | (0.191) | (0.192) | (0.192) | (0.192) | (0.192) | (0.192) | (0.192) | (0.234) | (0.240) |
| Gender (1 if male) | -0.123 | -0.101 | -0.132 | -0.118 | -0.125 | -0.125 | -0.148 | -0.254 | -0.209 |
| | (0.150) | (0.150) | (0.151) | (0.151) | (0.151) | (0.150) | (0.150) | (0.177) | (0.181) |
| **Marital status (Married = base case):** | | | | | | | | | |
| Previously married | -0.772*** | -0.770*** | -0.777*** | -0.795*** | -0.800*** | -0.795*** | -0.774*** | -0.773*** | -0.774*** |
| | (0.202) | (0.202) | (0.203) | (0.203) | (0.203) | (0.201) | (0.200) | (0.231) | (0.236) |
| Never been married | -0.185 | -0.193 | -0.188 | -0.216 | -0.229 | -0.175 | -0.147 | 0.199 | 0.238 |
| | (0.251) | (0.251) | (0.252) | (0.254) | (0.255) | (0.257) | (0.257) | (0.304) | (0.311) |
| Children | -0.0527 | -0.0560 | -0.0554 | -0.0542 | -0.0555 | -0.0582 | -0.0645 | -0.0814 | -0.0825 |
| | (0.0834) | (0.0833) | (0.0835) | (0.0837) | (0.0837) | (0.0840) | (0.0842) | (0.103) | (0.105) |

(continued on next page)

## Table 2.6 (continued)

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| **Country-of-origin characteristics:** | | | | | | | | | |
| LN(Rule of Law) | 1.789*** | 2.724*** | 1.569*** | 2.215*** | 1.774*** | 1.115 | 0.670 | 3.874*** | 4.588*** |
| | (0.332) | (0.420) | (0.375) | (0.610) | (0.641) | (0.687) | (0.744) | (1.131) | (1.374) |
| Asia | | 0.794*** | | | | | | | 2.760*** |
| | | (0.296) | | | | | | | (0.647) |
| Africa | | 1.254*** | | | | | | | 1.759** |
| | | (0.403) | | | | | | | (0.694) |
| North America | | 0.194 | | | | | | | 0.376 |
| | | (0.517) | | | | | | | (0.811) |
| South America | | 0.0190 | | | | | | | 1.624* |
| | | (0.588) | | | | | | | (0.926) |
| Europe | | 0.0545 | | | | | | | 0.525 |
| | | (0.242) | | | | | | | (0.418) |
| Muslims | | | -0.171 | | | | | | |
| | | | (0.313) | | | | | | |
| Buddhists | | | -0.467 | | | | | | |
| | | | (0.320) | | | | | | |
| Chinese Universists | | | 0.314 | | | | | | |
| | | | (0.487) | | | | | | |
| Hindus | | | 0.619 | | | | | | |
| | | | (0.427) | | | | | | |
| Non-religious | | | -0.536 | | | | | | |
| | | | (0.460) | | | | | | |
| GDP | | | | -0.114 | -0.148 | -0.115 | -0.109 | -0.236 | -0.348 |
| | | | | (0.118) | (0.119) | (0.132) | (0.132) | (0.169) | (0.229) |
| English speaking | | | | | 0.419** | 0.353* | 0.356* | 0.132 | 0.556* |
| | | | | | (0.197) | (0.205) | (0.212) | (0.257) | (0.294) |
| Market capitalisation | | | | | | 0.00331 | 0.00329 | 0.00500 | -0.000425 |
| | | | | | | (0.00254) | (0.00257) | (0.00328) | (0.00386) |
| Squared market capitalisation | | | | | | -0.00000951 | -0.00000943 | -0.0000143** | -0.00000898 |
| | | | | | | (0.00000618) | (0.00000620 | (0.000000725) | (0.00000802) |
| Workers remittances | | | | | | | -0.0332 | -0.0234 | -0.0700* |
| | | | | | | | (0.0238) | (0.0326) | (0.0378) |
| School enrolment | | | | | | | | -0.0382*** | -0.00228 |
| | | | | | | | | (0.0132) | (0.0162) |
| Constant | -5.954*** | -7.886*** | -5.612*** | -6.525*** | -6.011*** | -5.013*** | -4.170*** | -6.990*** | -11.91*** |
| | (0.845) | (1.016) | (0.901) | (1.073) | (1.096) | (1.150) | (1.252) | (1.804) | (2.479) |
| Observations | 5790 | 5790 | 5790 | 5690 | 5690 | 5405 | 5319 | 3783 | 3783 |
| Number of individuals | 3511 | 3511 | 3511 | 3454 | 3454 | 3288 | 3235 | 2486 | 2486 |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. Standard errors are indicated in parentheses. All models passed the Wald Chi-Square test, with the Wald statistic ranging from 249.3 to 407.8. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

### 2.4.3 Robustness checks

Following Osili and Paulson (2008), the following procedures were performed to check if there were other significant country characteristics correlated with institutional quality that were not included in the analysis. First, religion and continent controls were added individually to the regression testing the effect of Rule of Law, one of the institutional characteristics, on the equity investment by immigrants. Second, other country attributes such as GDP per capita, English-speaking ability, stock market capitalisation, remittances received, secondary school enrolment and once more continent controls were added progressively to the basic regression.

The analysis was carried out using panel data first. The first column of Table 2.6 replicates the results of the fifth column of Table 2.5 (Panel C). More precisely, it shows the influence of Rule of Law as well as the effects of personal characteristics on equity investment by Australian immigrants. The second column presents the results of estimates with the same variables and additional continent controls., Only immigrants from Asia and Africa, of the five continents, have a higher propensity to invest in equity compared to the base case of Oceania; nevertheless, the coefficient of Rule of Law is still highly significant with even higher value. Similarly, as reported in the next column, adding religious controls to the basic regression to account for the relation between a country-of-origin dominant religion and investor rights does not change the significance of the coefficient of interest.

GDP per capita, which is also often associated with institutional quality (Rodrik, Subramanian & Trebbi 2004), was included to test if a higher probability of investment in the stock market is undertaken by immigrants from countries with institutions similar to those of Australia. Additionally, English-speaking ability accounts for a possible higher participation in the Australian share market of immigrants from countries where English is one of the official languages. As the results suggest, being an immigrant from an English-speaking country plays an important and positive role on the probability to invest in the share market, whereas GDP has no effect on it. Similarly, home-country stock market capitalisation and workers' remittances do not play important roles in immigrants' investment decisions. The former characteristic was intended to account for the usage of the stock market in the past and the latter to account for investment through remittances in the country of origin. In spite of not being statistically significant, the influence from market capitalisation absorbs the positive effect of institutional quality until the secondary school enrolment variable is added

to the regression. In agreement with findings by Osili and Paulson (2008), a negative and significant effect of secondary school enrolment in the home countries suggests that a higher school enrolment rate in immigrants' home countries is associated with their lower investment in the Australian equity market. As this effect differs from the statistically insignificant effect registered in the absence of the additional controls, it could rather be attributed to the high correlation between Rule of Law and secondary school enrolment, as indicated in Table A.4 in Appendix A.

The coefficient for Rule of Law remained positive and significant throughout with two exceptions. The addition of the continent controls to the final regression did not change this outcome either. These results suggest the robustness of the finding that institutional quality affects the equity investment decisions of immigrants to Australia to the inclusion of additional country characteristics in the combined 2002 and 2006 data.

Although the application of 2002 data did not produce similar results (Table A.5 in Appendix A), this difference could be attributed to the high correlation between country-of-origin variables. For example, due to the high correlation between GDP per capita and Rule of Law[11], the coefficients on Rule of Law are not significant when GDP per capita was added to regression. A further redundant variable test confirmed that inclusion of GDP did not improve the model[12]; hence, it is not required to control for a home-country's GDP when institutional quality effect is included in the model. Adding the measures of English-speaking ability, country-of-origin market capitalisation properties and value of remittances received by countries did not drastically change the value of the institutional characteristic. The coefficient for Rule of Law became significantly positive again after inclusion of information about enrolment in secondary school, although it reduced its value and significance when controlling for continents of origin.

On the other hand, this odd outcome, obtained using 2002 data, did not occur when findings for 2006 were analysed for robustness as well (Table A.6 in Appendix A). In particular, similar to panel data analysis, the Rule of Law coefficient remained significantly positive despite including extra variables in the regressions. This suggests the robustness of the equity investment decision to adding more country-of-origin characteristics.

[11] The correlation coefficient between Ln (Rule of Law) and GDP in 2002 is 0.8894 with the significance at at least 0.01 level.

[12] For immigrants aged 15 and older, the null hypothesis is failed to be rejected under the Wald test with p=0.39.

### 2.4.4 Effects and persistence of institutional constraints

The investigation reported above confirms the existence and significance of home institutional effects, yet the questions of when and how these restrictions start affecting an individual's investment choices and how long these influences last has not yet been examined. Does the age at migration matter? Do home-country effects persist in both immigrants who migrated at an early age and those who migrated at a late age? How long do these effects continue to exist under the influence of a new formal institutional framework? As before, the following analysis was carried out using the probit model for estimating the 2002 and 2006 data and the random effect logit model for estimating the panel data.

**Table 2.7 Effects of home institutions on the probability of equity investment by immigrants aged 15 or older, depending on their age at migration to Australia (panel data)**

| | | Age at arrival in Australia | | |
|---|---|---|---|---|
| **Variables** | **All** | **1-15** | **16-20** | **21+** |
| **No year of arrival control** | | | | |
| Ln (Rule of Law) | 1.789*** | 0.279 | 1.460 | 2.234*** |
| | (0.332) | (0.609) | (1.104) | (0.468) |
| Log likelihood | -3001 | -994.6 | -279.5 | -1596 |
| **Year of arrival control** | | | | |
| Ln (Rule of Law) | 1.788*** | 0.0582 | 1.376 | 2.236*** |
| | (0.332) | (0.628) | (1.136) | (0.468) |
| Log likelihood | -3001 | -988.4 | -278.1 | -1596 |
| Number of observations | 5790 | 1862 | 630 | 3177 |

**Notes:** In addition to the coefficients reported above, the regressions also include controls for age, age squared, wealth, income, employment, education, gender, marital status, children and MSR. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

Table 2.7 addresses the first question by presenting how the institutional effect changes depending on the age of an immigrant at the time of settling in Australia, using the panel data[13]. Two sets of estimates are produced: one that does not include a year of arrival control

[13] The application of the 2002 and 2006 data produces similar results; hence, only panel data estimates are presented. The other results can be found in Table A.7 Effects of home institutions on the probability of equity investment by immigrants aged 15 or older, depending on their age at migration to Australia (2002 and 2006 data)Table A.7 in Appendix A.

and one that does. The sample has been divided into three age groups: the first group consists of those who arrived in Australia as a teenager aged under 16, the second group consists of individuals aged 16 to 20 at the time of arrival, and the last group consists of those who were aged 21 or older at the time of immigration. Similarly to the results produced by Osili and Paulson (2008), the effect of country-of-origin institutions is not present in the first group but is present in the third group of immigrants who were aged 21 or older at the time of arrival. Unlike immigrants to the US though, the investment decisions of Australian immigrants who were aged 16 to 20 are not affected by the institutions in their countries of origin. This difference could be explained by the different features of populations that are exposed to slightly different educational systems and family upbringing in both countries, which, in the Australian context, possibly puts less importance on the trustworthiness of home institutions.

The results of the analysis of the continuance of institutional effect are presented in Table 2.8. The sample is divided into five groups and, due to the similarity of results produced with and without individual's age at arrival controls, only those with controls are presented. The panel data and the data for 2002 show the strong influence on the equity investment decision in the first seven years spent in Australia, although this is not significant according to the data collected in 2006. All data samples, however, show no effect for immigrants living in Australia for 8 to 12 years and for those living in Australia for 13 to 17 years.

The striking difference from the US data is that the institutional influence is still persistent and significant in immigrants even after spending more than 28 years in Australia. Also, as argued by Osili and Paulson (2008), the effect of informal institutions is persistent for all immigrants to the US who migrated up to 27 years ago, whereas Australian immigrants do not show this tendency. While it is not surprising that recent immigrants are still affected by their home institutions, it is unexpected that immigrants with a period of residence of 18 years and longer are. This may have happened because these immigrants are from an older and more conservative cohort, the effects of which are not fully captured by the age variables.

**Table 2.8 Effects of home institutions on the probability of equity investment by immigrants aged 15 or older, depending on years spent in Australia, with age at arrival controls**

| | | Years in Australia | | | | |
|---|---|---|---|---|---|---|
| **Variables** | **All** | **1-7** | **8-12** | **13-17** | **18-27** | **28+** |
| **Panel data** | | | | | | |
| Ln (Rule of Law) | 1.391*** | 2.719*** | 0.0745 | 0.751 | 1.686*** | 1.499** |
| | (0.334) | (0.979) | (0.506) | (1.070) | (0.625) | (0.602) |
| Log likelihood | -2963 | -305.7 | -297.6 | -410.9 | -515.2 | -1401 |
| Number of observations | 5761 | 666 | 574 | 730 | 1041 | 2719 |
| **2002** | | | | | | |
| Ln (Rule of Law) | 0.314*** | 0.919*** | -0.498 | -0.374 | 0.559* | 0.400* |
| | (0.117) | (0.296) | (0.374) | (0.319) | (0.335) | (0.207) |
| Log likelihood | -1696 | -204.5 | -160.4 | -215.5 | -195.6 | -775.0 |
| Pseudo R-squared | 0.167 | 0.195 | 0.159 | 0.212 | 0.376 | 0.195 |
| Number of observations | 3060 | 431 | 309 | 427 | 457 | 1408 |
| **2006** | | | | | | |
| Ln (Rule of Law) | 0.407*** | 0.464 | 0.486 | 0.352 | 0.579** | 0.406* |
| | (0.122) | (0.420) | (0.387) | (0.360) | (0.267) | (0.212) |
| Log likelihood | -1545 | -96.28 | -115.6 | -170.2 | -297.8 | -745.1 |
| Pseudo R-squared | 0.132 | 0.182 | 0.260 | 0.0888 | 0.231 | 0.164 |
| Number of observations | 2701 | 224 | 255 | 290 | 584 | 1311 |

**Notes:** In addition to the coefficients reported above, the regressions also include controls for age, age squared, wealth, income, employment, education, gender, marital status, children, MSR and individual's age at arrival. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

For the purpose of comparison and testing of the age factor hypothesis, similar regressions were carried out for the 36+ respondents. The results of this exercise are presented in

Table A.8 in Appendix A. The home institutions effect in this age group is present only after spending more than 17 years in Australia, which is also the case for the main dataset that includes younger individuals. These results suggest that immigrants aged 15 to 35 (or 21 to 35 as reflected in Table 2.7) have a strong institutional influence from their countries of origin in the first seven years of living in Australia, but older individuals are not exposed to this impact. However, both age groups experience positive institutional influence after being nearly 20 years away from the country of origin.

This implies that during the three decades since the 1970s the characteristics of immigrants have changed. In particular, immigrants aged 21 to 35 retain their institutional factors for up to seven years but this influence then dies away. However immigrants who arrived a substantial time ago (in 1988 or before) do not lose the impact of their home institutional controls even after they have been in Australia for 28 years or more. These migrants arrived in Australia before the government changed the focus of its migration policy to labour market outcomes in the 1980s (Spinks 2010). The above results reflect the possibility that those who arrived before this change, mostly immigrants from countries with weak institutions, migrated mainly to join their families or as refugees (Walsh 2008), and it is expected that they would take a conservative approach to investing.

## 2.5 Self-reported financial risk: results and analysis

The previous section looked at equity investment as a possible measure of financial risk-taking. The positive effect of institutional quality on immigrant participation in the Australian financial markets through immigrants' increased participation in the share market generally agrees with the results obtained by Osili and Paulson (2008) for immigrants in the US. This study, however, goes further in the investigation of the institutional effect on the financial development of Australian financial markets by considering self-reported financial risk-taking (SRFRT) as an additional measure of financial risk-taking. As mentioned earlier, SRFRT measures the level of financial risk an individual is prepared to take on a scale of 1 to 4 and is available in the HILDA Survey. The next step involved an assessment of the factors influencing SRFRT and, in particular, if it depends on whether an individual was born in Australia or overseas.

### 2.5.1 Difference in self-reported financial risk-taking between immigrants and native-born individuals

Table 2.9 presents the financial risk estimation results for data collected in 2002 and 2006, and the panel dataset using observations for both years. Regressions were run for 2002 and 2006 data using the ordered probit model (2.2), excluding the institutional variables[14] and including a dummy, which is equal to 1 if an individual was born in Australia and 0 otherwise. In a similar fashion, the ordered dependent variable model with fixed effects was applied to the panel data, assuming that both years have the same error variances and same coefficients but different intercepts. Additionally, it was assumed that error terms across years are not contemporaneously correlated. The coefficients for both periods are similar except that the negative effects of having resident children and being never married on financial risk-taking is not significant in 2002. In addition, the higher propensity to take financial risk by individuals with a bachelor or higher degree and the lower risk predisposition of people born outside Australia is not detected in 2006.

Increasing the lower limit of the sample to the age of 36 and adding occupation and household location variables changed some factors affecting financial risk-taking. For example, the Australian-born factor is brought into prominence in 2006. The negative association of being unemployed is now accentuated, but the number of resident children and the comparison of being never married with being in a committed relationship are not statistically significant for the financial risk-taking in all three datasets (Table 2.10). The presence of the unemployment factor and the nullification of the marriage factor could be attributed to the specifics of 36+ individuals who are unlikely to be never married and more likely to be employed than 15+ individuals. The risk-taking activities of younger people could also be less dependent on their employment status due to their fewer financial commitments. Having dependent children also probably has more effect on the financial risk-taking ability of the 15+ group, who are less financially stable.

Occupational status and household location were included in the regressions to account for the more settled lifestyle of the older generation. The high significance of the occupational parameter confirms the validity of this inclusion. Compared to the base case of managers and administrators, representatives of all other eight professional groups are prepared to take significantly lower financial risks. Location of household, on the other hand, matters only for

[14] Country-of-origin variables controlling for the quality of institutions were not included since Australian-born individuals form the majority of the sample.

the urban population, with the residents of major urban areas being ready to take higher risks than those living in other urban areas. The negative effect of living in rural areas on SRFRT can be ignored due to its weak significance.

## Table 2.9 Factors affecting SRFRT of Australian residents (aged 15 or older)

| VARIABLES | 2002 | 2006 | Panel data |
|---|---|---|---|
| Age | 0.0210*** | 0.0182*** | 0.0197*** |
| | (0.00458) | (0.00441) | (0.00317) |
| $Age^2$ | -0.000315*** | -0.000310*** | -0.000312*** |
| | (0.000048) | (0.0000465) | (0.0000333) |
| Wealth | 0.00268*** | 0.00152*** | 0.00196*** |
| | (0.000171) | (0.0000908) | (0.000087) |
| Income | 0.0150** | 0.0349*** | 0.0241*** |
| | (0.00766) | (0.00778) | (0.00544) |
| **Employment status (Employed = base case):** | | | |
| Unemployed | -0.00523 | 0.0179 | 0.000987 |
| | (0.0759) | (0.0829) | (0.0559) |
| Not in labour force | -0.243*** | -0.124*** | -0.187*** |
| | (0.0363) | (0.0365) | (0.0257) |
| **Level of highest education achieved (No post-school qualification = base case):** | | | |
| Bachelor degree or higher | 0.155*** | 0.0255 | 0.0889*** |
| | (0.0302) | (0.0299) | (0.0212) |
| Other post-school qualification | 0.468*** | 0.392*** | 0.431*** |
| | (0.0334) | (0.0324) | (0.0232) |
| Gender | 0.308*** | 0.397*** | 0.353*** |
| | (0.0256) | (0.0251) | (0.0179) |
| **Marital status (Married = base case):** | | | |
| Previously married | -0.0763* | -0.145*** | -0.115*** |
| | (0.0418) | (0.0415) | (0.0294) |
| Never been married | -0.0306 | -0.0725* | -0.0514* |
| | (0.0415) | (0.0398) | (0.0287) |
| No. of children | -0.0207 | -0.0522*** | -0.0361*** |
| | (0.0145) | (0.0155) | (0.0106) |
| **Born in Australia** | 0.0895*** | 0.0252 | 0.0612*** |
| | (0.0303) | (0.0308) | (0.0216) |
| Year=1 if 2006 | | | -0.0467*** |
| | | | (0.0173) |
| Observations | 9143 | 9394 | 18537 |
| Log likelihood | -8331 | -8705 | -17069 |
| Pseudo R-squared | 0.0743 | 0.0730 | 0.0720 |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. The sample is limited to individuals aged 15 or older who have non-missing data on country of origin. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

**Table 2.10 Factors affecting SRFRT of Australian residents (aged 36 or older)**

| VARIABLES | 2002 | 2006 | Panel data |
|---|---|---|---|
| Age | 0.0450*** | 0.0359*** | 0.0421*** |
| | (0.0122) | (0.0118) | (0.00844) |
| $Age^2$ | -0.000513*** | -0.000450*** | -0.000494*** |
| | (0.000105) | (0.0000998) | (0.000072) |
| Wealth | 0.00277*** | 0.00136*** | 0.00182*** |
| | (0.000210) | (0.000106) | (0.000102) |
| Income | 0.0414*** | 0.0692*** | 0.0544*** |
| | (0.0131) | (0.0149) | (0.00980) |
| **Employment status (Employed = base case):** | | | |
| Unemployed | -0.226* | -0.509*** | -0.345*** |
| | (0.130) | (0.165) | (0.101) |
| Not in labour force | -0.530*** | -0.405*** | -0.476*** |
| | (0.0700) | (0.0675) | (0.0484) |
| **Occupation (Managers and administrators = base case):** | | | |
| Professionals | -0.248*** | -0.169*** | -0.214*** |
| | (0.0684) | (0.0648) | (0.0469) |
| Associate professionals | -0.241*** | -0.0891 | -0.166*** |
| | (0.0752) | (0.0714) | (0.0517) |
| Trades Persons | -0.399*** | -0.290*** | -0.356*** |
| | (0.0837) | (0.0815) | (0.0582) |
| Elementary clerical workers | -0.217* | -0.109 | -0.168** |
| | (0.114) | (0.110) | (0.0789) |
| Intermediate clerical workers | -0.323*** | -0.359*** | -0.354*** |
| | (0.0777) | (0.0737) | (0.0533) |
| Advanced clerical workers | -0.435*** | -0.453*** | -0.452*** |
| | (0.0904) | (0.0886) | (0.0631) |
| Production workers | -0.422*** | -0.513*** | -0.473*** |
| | (0.105) | (0.109) | (0.0752) |
| Labourers and related workers | -0.609*** | -0.604*** | -0.620*** |
| | (0.0994) | (0.0963) | (0.0689) |
| **Level of highest education achieved (No post-school qualification= base case)** | | | |
| Bachelor degree or higher | 0.196*** | 0.0339 | 0.114*** |
| | (0.0377) | (0.0372) | (0.0264) |
| Other post-school qualification | 0.384*** | 0.332*** | 0.362*** |
| | (0.0471) | (0.0456) | (0.0327) |
| Gender (1 if male) | 0.272*** | 0.393*** | 0.332*** |
| | (0.0352) | (0.0344) | (0.0245) |
| **Marital status (Married = base case):** | | | |
| Previously married | -0.0901** | -0.133*** | -0.120*** |
| | (0.0449) | (0.0441) | (0.0314) |
| Never been married | 0.00989 | -0.0821 | -0.0431 |
| | (0.0665) | (0.0646) | (0.0462) |
| No. of children | 0.00872 | -0.0248 | -0.00891 |
| | (0.0203) | (0.0219) | (0.0148) |
| **Location of household (Major urban =base case):** | | | |
| Other urban | -0.0875 | -0.180*** | -0.135*** |
| | (0.0542) | (0.0522) | (0.0375) |
| Bounded locality | 0.0404 | -0.187** | -0.0801 |
| | (0.0942) | (0.0939) | (0.0663) |
| Rural balance | -0.0824 | -0.0788 | -0.0746* |
| | (0.0605) | (0.0568) | (0.0413) |
| **Born in Australia** | 0.0993*** | 0.0758** | 0.0910*** |
| | (0.0361) | (0.0362) | (0.0255) |
| Year=1 if 2006 | | | -0.0646*** |
| | | | (0.0219) |
| Observations | 5986 | 6143 | 12129 |
| Log likelihood | -5178 | -5363 | -10578 |
| Pseudo R-squared | 0.102 | 0.106 | 0.101 |

**Notes:** The sample is limited to individuals aged 36 or older who have non-missing data on country of origin. In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. Occupation and household location variables are added to account for specifics of a more mature generation compared to individuals aged 15 or older. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

According to the information presented in Tables 2.9 and 2.10, the difference in SRFRT among Australians is affected by personal characteristics such as age, wealth, income, employment status, educational attainment, gender, marital status and employment status. Most of these variables have a similar effect on equity investment with a few exceptions. As before, a better financial situation associated with higher levels of wealth is conducive to an individual's readiness to take higher financial risk. Likewise, people with post-school education tend to have more confidence in taking financial risk than those without qualifications. Understandably, unemployed individuals or those who are not in the labour force tend to give themselves a lower financial risk-taking assessment than their employed counterparts. However, only the equity investment decisions of the 15+ group, as discussed earlier, but not their SRFRT, are negatively affected by their being unemployed. Also, in spite of a higher income being conducive to taking higher financial risk by this group, it tends to lower their participation in the stock market. Self-perceived financial risk-taking increases with age but only for young individuals, with a turning point, on average, in their early 30s for the first set and early 40s for the 36+ set. This effect is different from the positive age effect reported for equity investment, which persists in individuals even past retirement age, and could be more prominent in individuals born abroad. As the SRFRT of immigrants is similar to that of Australian-born individuals when all people are considered but lower when the older age group is used, this suggests that immigrants in the 36+ group are more conservative in their financial decisions than their Australian-born counterparts. Male respondents tend to estimate their financial risk-taking behaviour as higher but, as reflected in Table 2.3, their actual stock market participation is not different from, or, as Table 2.4 reports, in some cases is even lower than, the participation of their female counterparts. Although these differences could be to some extent attributed to the various levels of risks associated with holding various shares, they also suggests that actual equity investment does not always reflect an individual's perception about their risk-taking capacity and vice versa.

Despite these differences, the SRFRT of all respondents in 2002 and that of the 36+ respondents in 2006, similarly to equity investment, also depends on whether the individuals were born in Australia or abroad. In particular, being born in Australia increases the self-assessed disposition for taking higher financial risk. This conforms with the results obtained by Bonin et al. (2007), who investigated the differences in risk attitude between native-born and foreign-born individuals using German survey data. They argued that foreign nationals in

Germany tend to take less risk than German-born individuals, although their next generation's risk attitudes do not differ.

Using variables different from personal characteristics but related to countries of origin can shed more light on the difference in self-assessed financial risk-taking. Equity investment is considered a good proxy for financial risk-taking due to higher financial risk being associated with higher returns. Similarly, as argued by Osili and Paulson (2008), stock market investment is 'the logical individual-level counterpart to country-level stock market capitalization, the measure of financial development used in many studies'. Following their approach led to the previous section's findings which confirm that the home-country institutional environment does influence the financial investment decisions of immigrants. The availability of SRFRT, another measure of the financial risk-taking behaviour in HILDA, suggests that both equity investment and SRFRT should have similar qualities. Most of the personal variables, albeit with some exclusions, have comparable effects on both measures of financial risk; hence, it is sensible to test whether the institutional quality in a country of origin also affects SRFRT.

As before, the ordered probit model was used for the estimation of SRFRT of immigrants in 2002 and 2006, and the ordered dependent variable model with fixed effects was applied to the panel data.

### 2.5.2 Self-reported financial risk-taking and institutional quality: baseline findings

Table 2.11 (Panel A) presents estimates of how the institutional quality in the country of origin affects immigrants' self-assessed preparedness to take financial risk in 2002. The estimation results for this year are similar to those reported in the previous section. However, in contrast with the estimates for stock market participation, the only institutional parameter not affecting the SRFRT of immigrants is the measure of the degree of institutional constraints on executive authority. Voice and Accountability also becomes insignificant when using the panel data (Table 2.11 [Panel C]) but it is still represented by a positive significant coefficient when the younger people aged 15 to 35 are excluded from the sample (Table 2.11 [Panel D])[15].

A notable difference in the ways institutional quality affects the equity investment and SRFRT by immigrants in 2006 is, as reported in Table 2.11 (Panel B), that none of the

[15] This suggests that Voice and Accountability has a weaker effect on the SRFRT of immigrants, compared to other institutional variables, and this effect is less evident in younger individuals.

institutional parameters used before is important in the determination of the preparedness to risk.[16] This outcome supports the results presented in Table 2.9. In particular, there is no difference in preparedness to take financial risk between native and foreign-born individuals in 2006, whereas this difference exists in 2002 and when using combined data for both periods. Similarly, as reflected in Panel A to Panel C of Table 2.11, the institutional effect in 2002 is so strong that it dominates the insignificant effect in 2006 when data for both periods are combined. The absence of institutional effect could mean that it is subjected to a finite period which could have ended for most of the respondents after they were surveyed in 2002. This hypothesis, however, needs to be further verified in the subsequent sections.

Despite using the same explanatory variables for the determination of equity investment and SRFRT, the estimation results are different in both cases. These findings imply that these measures of financial risk-taking are not interchangeable and that all equity investments are not equally risky. Thus, equity investment may not be a very good proxy for financial risk-taking behaviour. The low values of correlation coefficients between the two variables, varying from 0.22 in 2006 to 0.24 in 2002 with 0.23 for the panel data set, further support this argument.

[16] The application of a more restricted dataset containing individuals aged 36 or older interviewed in 2006 produces similar results.

## Table 2.11 Quality of institutions' effect on SRFRT by immigrants
### Panel A) 2002 data (individuals aged 15 or older)

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Age | 0.0236** | 0.0229** | 0.0229** | 0.0229** | 0.0225** | 0.0229** | 0.0285*** | 0.0261** | 0.0265** | 0.0301*** |
| | (0.0108) | (0.0108) | (0.0108) | (0.0108) | (0.0108) | (0.0108) | (0.0109) | (0.0109) | (0.0124) | (0.0110) |
| $Age^2$ | -0.000372*** | -0.000367*** | -0.000373*** | -0.000373*** | -0.000368*** | -0.000372*** | -0.000409*** | -0.000396*** | -0.000369*** | -0.000437*** |
| | (0.000110) | (0.000110) | (0.000110) | (0.000110) | (0.000110) | (0.000110) | (0.000111) | (0.000111) | (0.000125) | (0.000112) |
| Wealth | 0.00295*** | 0.00297*** | 0.00291*** | 0.00291*** | 0.00292*** | 0.00295*** | 0.00291*** | 0.00290*** | 0.00262*** | 0.00287*** |
| | (0.000356) | (0.000356) | (0.000356) | (0.000356) | (0.000356) | (0.000356) | (0.000356) | (0.000356) | (0.000408) | (0.000358) |
| Income | 0.00609 | 0.00443 | 0.00254 | 0.00254 | 0.00260 | 0.00362 | 0.00653 | 0.00517 | 0.0273 | 0.0135 |
| | (0.0172) | (0.0173) | (0.0173) | (0.0173) | (0.0173) | (0.0172) | (0.0173) | (0.0174) | (0.0220) | (0.0177) |
| **Employment status (Employed = base case):** | | | | | | | | | | |
| Unemployed | -0.0532 | -0.0448 | -0.0441 | -0.0441 | -0.0444 | -0.0447 | -0.0465 | -0.0494 | -0.176 | -0.0505 |
| | (0.152) | (0.152) | (0.152) | (0.152) | (0.152) | (0.152) | (0.154) | (0.154) | (0.195) | (0.154) |
| Not in labour | -0.273*** | -0.276*** | -0.275*** | -0.275*** | -0.275*** | -0.274*** | -0.277*** | -0.280*** | -0.301*** | -0.241*** |
| force | (0.0761) | (0.0761) | (0.0761) | (0.0761) | (0.0761) | (0.0760) | (0.0768) | (0.0768) | (0.0900) | (0.0790) |
| **Level of highest education achieved (No post-school qualification = base case):** | | | | | | | | | | |
| Bachelor degree | 0.0991 | 0.0988 | 0.0900 | 0.0900 | 0.0945 | 0.0952 | 0.0944 | 0.0943 | 0.105 | 0.0814 |
| or higher | (0.0646) | (0.0646) | (0.0647) | (0.0647) | (0.0647) | (0.0647) | (0.0651) | (0.0651) | (0.0734) | (0.0660) |
| Other post-school | 0.424*** | 0.436*** | 0.431*** | 0.431*** | 0.434*** | 0.430*** | 0.400*** | 0.422*** | 0.398*** | 0.413*** |
| qualification | (0.0672) | (0.0674) | (0.0671) | (0.0671) | (0.0672) | (0.0671) | (0.0674) | (0.0678) | (0.0803) | (0.0691) |
| Gender (1 if male) | 0.348*** | 0.350*** | 0.349*** | 0.349*** | 0.348*** | 0.349*** | 0.340*** | 0.345*** | 0.318*** | 0.343*** |
| | (0.0552) | (0.0553) | (0.0553) | (0.0553) | (0.0553) | (0.0553) | (0.0558) | (0.0558) | (0.0652) | (0.0566) |
| **Marital status (Married = base case):** | | | | | | | | | | |
| Previously | 0.0554 | 0.0570 | 0.0622 | 0.0622 | 0.0596 | 0.0602 | 0.0452 | 0.0382 | 0.0614 | 0.0325 |
| married | (0.0853) | (0.0854) | (0.0854) | (0.0854) | (0.0854) | (0.0854) | (0.0862) | (0.0862) | (0.0963) | (0.0874) |
| Never been | 0.137 | 0.138 | 0.150 | 0.150 | 0.143 | 0.147 | 0.139 | 0.135 | 0.262** | 0.170* |
| married | (0.0990) | (0.0991) | (0.0991) | (0.0991) | (0.0990) | (0.0990) | (0.100) | (0.100) | (0.115) | (0.102) |
| No. of children | -0.0105 | -0.00747 | -0.00514 | -0.00514 | -0.00565 | -0.00718 | -0.0137 | -0.0102 | 0.0132 | -0.00730 |
| | (0.0316) | (0.0317) | (0.0317) | (0.0317) | (0.0316) | (0.0316) | (0.0322) | (0.0321) | (0.0370) | (0.0332) |
| **Qualities of country-of-origin institutions:** | | | | | | | | | | |
| Voice & Accountability | 0.302** | | | | | | | | | |
| | (0.126) | | | | | | | | | |
| Political Stability | | 0.478*** | | | | | | | | |
| | | (0.136) | | | | | | | | |
| Government Effectiveness | | | 0.577*** | | | | | | | |
| | | | (0.133) | | | | | | | |
| Control of Corruption | | | | 0.577*** | | | | | | |
| | | | | (0.133) | | | | | | |
| Rule of Law | | | | | 0.505*** | | | | | |
| | | | | | (0.125) | | | | | |
| Regulatory Quality | | | | | | 0.491*** | | | | |
| | | | | | | (0.129) | | | | |
| British Legal | | | | | | | 0.109** | | | |
| | | | | | | | (0.0550) | | | |
| Latitude | | | | | | | | 0.399** | | |
| | | | | | | | | (0.157) | | |
| School Enrolment | | | | | | | | | 0.00566** | |
| | | | | | | | | | (0.00220) | |
| Constraint on Executive | | | | | | | | | | 0.0353 |
| | | | | | | | | | | (0.0224) |
| Observations | 2109 | 2107 | 2110 | 2110 | 2110 | 2110 | 2072 | 2071 | 1563 | 2006 |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. Standard errors are indicated in parentheses. All models passed the LR Chi-Square test, with the LR statistic ranging from 273.1 to 385.4 and the pseudo R-squared ranging from 0.0886 to 0.0921.*** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

**Panel B) 2006 data (individuals aged 15 or older)**

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Age | 0.00557 | 0.00535 | 0.00520 | 0.00520 | 0.00550 | 0.00565 | 0.00699 | 0.00660 | 0.0245* | 0.00773 |
| | (0.0112) | (0.0113) | (0.0112) | (0.0112) | (0.0112) | (0.0112) | (0.0113) | (0.0113) | (0.0141) | (0.0114) |
| $Age^2$ | -0.000243** | -0.000242** | -0.000242** | -0.000242** | -0.000244** | -0.000244** | -0.000255** | -0.000252** | -0.000383*** | -0.000265** |
| | (0.000114) | (0.000114) | (0.000114) | (0.000114) | (0.000114) | (0.000114) | (0.000115) | (0.000115) | (0.000140) | (0.000116) |
| Wealth | 0.00129*** | 0.00128*** | 0.00128*** | 0.00128*** | 0.00129*** | 0.00129*** | 0.00127*** | 0.00128*** | 0.000993*** | 0.00132*** |
| | (0.000199) | (0.000199) | (0.000199) | (0.000199) | (0.000199) | (0.000199) | (0.000199) | (0.000199) | (0.000236) | (0.000205) |
| Income | 0.0716*** | 0.0715*** | 0.0711*** | 0.0711*** | 0.0712*** | 0.0714*** | 0.0674*** | 0.0684*** | 0.0513** | 0.0805*** |
| | (0.0192) | (0.0192) | (0.0192) | (0.0192) | (0.0192) | (0.0192) | (0.0194) | (0.0194) | (0.0241) | (0.0208) |
| **Employment status (Employed = base case):** | | | | | | | | | | |
| Unemployed | -0.0498 | -0.0494 | -0.0429 | -0.0429 | -0.0461 | -0.0478 | -0.0277 | -0.0320 | -0.296 | -0.0153 |
| | (0.198) | (0.198) | (0.198) | (0.198) | (0.198) | (0.198) | (0.200) | (0.200) | (0.331) | (0.204) |
| Not in labour force | -0.177** | -0.177** | -0.174** | -0.174** | -0.175** | -0.176** | -0.172** | -0.175** | -0.214** | -0.186** |
| | (0.0788) | (0.0788) | (0.0788) | (0.0788) | (0.0788) | (0.0788) | (0.0796) | (0.0795) | (0.0979) | (0.0807) |
| **Level of highest education achieved (No post-school qualification = base case):** | | | | | | | | | | |
| Bachelor degree or higher | 0.0443 | 0.0439 | 0.0439 | 0.0439 | 0.0454 | 0.0460 | 0.0391 | 0.0375 | 0.0314 | 0.0415 |
| | (0.0673) | (0.0673) | (0.0674) | (0.0674) | (0.0673) | (0.0673) | (0.0677) | (0.0677) | (0.0832) | (0.0683) |
| Other post-school qualification | 0.375*** | 0.376*** | 0.379*** | 0.379*** | 0.378*** | 0.377*** | 0.365*** | 0.364*** | 0.308*** | 0.379*** |
| | (0.0682) | (0.0681) | (0.0680) | (0.0680) | (0.0680) | (0.0680) | (0.0683) | (0.0685) | (0.0862) | (0.0697) |
| Gender (1 if male) | 0.363*** | 0.363*** | 0.361*** | 0.361*** | 0.361*** | 0.361*** | 0.358*** | 0.362*** | 0.293*** | 0.363*** |
| | (0.0560) | (0.0559) | (0.0559) | (0.0559) | (0.0559) | (0.0559) | (0.0563) | (0.0563) | (0.0703) | (0.0572) |
| **Marital status (Married = base case):** | | | | | | | | | | |
| Previously married | -0.0399 | -0.0394 | -0.0390 | -0.0390 | -0.0396 | -0.0401 | -0.0483 | -0.0471 | -0.0218 | -0.0328 |
| | (0.0848) | (0.0848) | (0.0848) | (0.0848) | (0.0848) | (0.0848) | (0.0851) | (0.0851) | (0.103) | (0.0859) |
| Never been married | 0.0469 | 0.0467 | 0.0491 | 0.0491 | 0.0480 | 0.0474 | 0.0546 | 0.0563 | 0.241* | 0.0377 |
| | (0.101) | (0.101) | (0.101) | (0.101) | (0.101) | (0.101) | (0.101) | (0.101) | (0.135) | (0.104) |
| No. of children | -0.0810** | -0.0806** | -0.0816** | -0.0816** | -0.0828** | -0.0832** | -0.0769** | -0.0737** | -0.0377 | -0.0838** |
| | (0.0358) | (0.0358) | (0.0358) | (0.0358) | (0.0358) | (0.0358) | (0.0358) | (0.0359) | (0.0449) | (0.0366) |
| **Qualities of country-of-origin institutions:** | | | | | | | | | | |
| Voice & Accountability | 0.00232 (0.117) | | | | | | | | | |
| Political Stability | | 0.0374 (0.120) | | | | | | | | |
| Government Effectiveness | | | 0.114 (0.130) | | | | | | | |
| Control of Corruption | | | | 0.114 (0.130) | | | | | | |
| Rule of Law | | | | | 0.0435 (0.122) | | | | | |
| Regulatory Quality | | | | | | 0.0132 (0.124) | | | | |
| British Legal | | | | | | | 0.0502 (0.0572) | | | |
| Latitude | | | | | | | | 0.0531 (0.157) | | |
| School Enrolment | | | | | | | | | -0.000330 (0.00264) | |
| Constraint on Executive | | | | | | | | | | -0.00453 (0.0212) |
| Observations | 1954 | 1954 | 1955 | 1955 | 1955 | 1955 | 1926 | 1925 | 1252 | 1886 |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. Standard errors are indicated in parentheses. All models passed the LR Chi-Square test, with the LR statistic ranging from 200.9 to 365.7 and the pseudo R-squared ranging from 0.0812 to 0.0955.*** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

## Panel C) panel data (individuals aged 15 or older)

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Age | 0.0168** | 0.0164** | 0.0162** | 0.0162** | 0.0163** | 0.0165** | 0.0200** | 0.0186** | 0.0272*** | 0.0211*** |
| | (0.00775) | (0.00776) | (0.00775) | (0.00775) | (0.00776) | (0.00775) | (0.00779) | (0.00781) | (0.00926) | (0.00790) |
| $Age^2$ | -0.000326*** | -0.000323*** | -0.000325*** | -0.000325*** | -0.000324*** | -0.000326*** | -0.000350*** | -0.000343*** | -0.000387*** | -0.000369*** |
| | (0.0000789) | (0.0000789) | (0.0000789) | (0.0000789) | (0.0000789) | (0.0000789) | (0.0000793) | (0.0000794) | (0.0000925) | (0.0000803) |
| Wealth | 0.00185*** | 0.00185*** | 0.00183*** | 0.00183*** | 0.00184*** | 0.00185*** | 0.00183*** | 0.00183*** | 0.00155*** | 0.00187*** |
| | (0.000187) | (0.000187) | (0.000187) | (0.000187) | (0.000187) | (0.000187) | (0.000187) | (0.000187) | (0.000220) | (0.000191) |
| Income | 0.0370*** | 0.0364*** | 0.0353*** | 0.0353*** | 0.0354*** | 0.0361*** | 0.0345*** | 0.0348*** | 0.0386** | 0.0436*** |
| | (0.0128) | (0.0128) | (0.0128) | (0.0128) | (0.0128) | (0.0128) | (0.0129) | (0.0129) | (0.0162) | (0.0134) |
| **Employment status (Employed = base case):** | | | | | | | | | | |
| Unemployed | -0.0366 | -0.0372 | -0.0301 | -0.0301 | -0.0315 | -0.0323 | -0.0257 | -0.0288 | -0.186 | -0.0256 |
| | (0.120) | (0.120) | (0.120) | (0.120) | (0.120) | (0.120) | (0.121) | (0.121) | (0.167) | (0.122) |
| Not in labour | -0.228*** | -0.227*** | -0.226*** | -0.226*** | -0.226*** | -0.226*** | -0.226*** | -0.230*** | -0.267*** | -0.214*** |
| force | (0.0545) | (0.0544) | (0.0545) | (0.0545) | (0.0545) | (0.0544) | (0.0550) | (0.0550) | (0.0658) | (0.0562) |
| **Level of highest education achieved (No post-school qualification = base case):** | | | | | | | | | | |
| Bachelor degree | 0.0784* | 0.0772* | 0.0732 | 0.0732 | 0.0761 | 0.0771* | 0.0711 | 0.0704 | 0.0759 | 0.0667 |
| or higher | (0.0465) | (0.0465) | (0.0465) | (0.0465) | (0.0465) | (0.0465) | (0.0468) | (0.0468) | (0.0548) | (0.0473) |
| Other post-school | 0.397*** | 0.400*** | 0.401*** | 0.401*** | 0.401*** | 0.400*** | 0.381*** | 0.390*** | 0.355*** | 0.392*** |
| qualification | (0.0477) | (0.0477) | (0.0476) | (0.0476) | (0.0476) | (0.0476) | (0.0478) | (0.0480) | (0.0585) | (0.0489) |
| Gender (1 if male) | 0.348*** | 0.350*** | 0.348*** | 0.348*** | 0.347*** | 0.347*** | 0.343*** | 0.346*** | 0.297*** | 0.346*** |
| | (0.0391) | (0.0391) | (0.0391) | (0.0391) | (0.0391) | (0.0391) | (0.0394) | (0.0394) | (0.0475) | (0.0400) |
| **Marital status (Married = base case):** | | | | | | | | | | |
| Previously | -0.000557 | 0.00226 | 0.00348 | 0.00348 | 0.00274 | 0.00188 | -0.0105 | -0.0115 | 0.0128 | -0.00493 |
| married | (0.0599) | (0.0600) | (0.0599) | (0.0599) | (0.0599) | (0.0599) | (0.0604) | (0.0604) | (0.0700) | (0.0611) |
| Never been | 0.0896 | 0.0873 | 0.0964 | 0.0964 | 0.0934 | 0.0932 | 0.0945 | 0.0951 | 0.251*** | 0.105 |
| married | (0.0705) | (0.0705) | (0.0705) | (0.0705) | (0.0704) | (0.0705) | (0.0709) | (0.0710) | (0.0870) | (0.0722) |
| No. of children | -0.0450* | -0.0438* | -0.0424* | -0.0424* | -0.0435* | -0.0443* | -0.0454* | -0.0418* | -0.00820 | -0.0442* |
| | (0.0236) | (0.0236) | (0.0236) | (0.0236) | (0.0236) | (0.0236) | (0.0238) | (0.0239) | (0.0284) | (0.0245) |
| Year=1 if 2006 | -0.00346 | 0.00373 | 0.000147 | 0.000147 | -0.00321 | -0.00601 | -0.00166 | 0.00104 | -0.0231 | -0.0102 |
| | (0.0375) | (0.0376) | (0.0375) | (0.0375) | (0.0375) | (0.0374) | (0.0377) | (0.0377) | (0.0455) | (0.0383) |
| **Qualities of country-of-origin institutions:** | | | | | | | | | | |
| Voice & Accountability | 0.138 | | | | | | | | | |
| | (0.0855) | | | | | | | | | |
| Political Stability | | 0.225** | | | | | | | | |
| | | (0.0896) | | | | | | | | |
| Government Effectiveness | | | 0.344*** | | | | | | | |
| | | | (0.0926) | | | | | | | |
| Control of Corruption | | | | 0.344*** | | | | | | |
| | | | | (0.0926) | | | | | | |
| Rule of Law | | | | | 0.271*** | | | | | |
| | | | | | (0.0868) | | | | | |
| Regulatory Quality | | | | | | 0.243*** | | | | |
| | | | | | | (0.0890) | | | | |
| British Legal | | | | | | | 0.0840** | | | |
| | | | | | | | (0.0395) | | | |
| Latitude | | | | | | | | 0.240** | | |
| | | | | | | | | (0.111) | | |
| School Enrolment | | | | | | | | | 0.00323* | |
| | | | | | | | | | (0.00168) | |
| Constraint on Executive | | | | | | | | | | 0.0138 |
| | | | | | | | | | | (0.0153) |
| Observations | 4063 | 4061 | 4065 | 4065 | 4065 | 4065 | 3998 | 3996 | 2815 | 3892 |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. Standard errors are indicated in parentheses. All models passed the LR Chi-Square test, with the LR statistic ranging from 449.1 to 713.5 and the pseudo R-squared ranging from 0.0809 to 0.0880.*** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

## Panel D) panel data (individuals aged 36 or older)

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Age | 0.0117 | 0.0118 | 0.0120 | 0.0120 | 0.0122 | 0.0114 | 0.0170 | 0.0121 | 0.0204 | 0.0153 |
| | (0.0174) | (0.0174) | (0.0174) | (0.0174) | (0.0174) | (0.0174) | (0.0176) | (0.0175) | (0.0203) | (0.0178) |
| $Age^2$ | -0.000290* | -0.000289* | -0.000295** | -0.000295** | -0.000296** | -0.000290* | -0.000332** | -0.000295* | -0.000336* | -0.000326** |
| | (0.000150) | (0.000150) | (0.000150) | (0.000150) | (0.000150) | (0.000150) | (0.000151) | (0.000151) | (0.000172) | (0.000153) |
| Wealth | 0.00170*** | 0.00170*** | 0.00169*** | 0.00169*** | 0.00169*** | 0.00169*** | 0.00170*** | 0.00171*** | 0.00139*** | 0.00174*** |
| | (0.000204) | (0.000204) | (0.000204) | (0.000204) | (0.000204) | (0.000204) | (0.000204) | (0.000204) | (0.000237) | (0.000209) |
| Income | 0.0631*** | 0.0628*** | 0.0610*** | 0.0610*** | 0.0610*** | 0.0620*** | 0.0588*** | 0.0598*** | 0.0689*** | 0.0709*** |
| | (0.0189) | (0.0190) | (0.0190) | (0.0190) | (0.0190) | (0.0189) | (0.0191) | (0.0191) | (0.0225) | (0.0194) |
| **Employment status (Employed = base case):** | | | | | | | | | | |
| Unemployed | -0.450** | -0.459** | -0.440** | -0.440** | -0.444** | -0.445** | -0.445** | -0.454** | -0.536** | -0.455** |
| | (0.185) | (0.185) | (0.185) | (0.185) | (0.185) | (0.185) | (0.188) | (0.189) | (0.233) | (0.189) |
| Not in labour force | -0.551*** | -0.558*** | -0.551*** | -0.551*** | -0.551*** | -0.552*** | -0.528*** | -0.547*** | -0.629*** | -0.544*** |
| | (0.0993) | (0.0992) | (0.0993) | (0.0993) | (0.0993) | (0.0993) | (0.101) | (0.100) | (0.117) | (0.101) |
| **Occuoation (Managers and administrators = base case):** | | | | | | | | | | |
| Professionals | -0.326*** | -0.334*** | -0.332*** | -0.332*** | -0.332*** | -0.330*** | -0.320*** | -0.328*** | -0.386*** | -0.314*** |
| | (0.0953) | (0.0954) | (0.0953) | (0.0953) | (0.0953) | (0.0953) | (0.0962) | (0.0962) | (0.113) | (0.0966) |
| Associate professionals | -0.298*** | -0.302*** | -0.297*** | -0.297*** | -0.299*** | -0.297*** | -0.275** | -0.293*** | -0.342*** | -0.300*** |
| | (0.106) | (0.106) | (0.106) | (0.106) | (0.106) | (0.106) | (0.107) | (0.107) | (0.126) | (0.108) |
| Trades Persons | -0.296** | -0.308*** | -0.292** | -0.292** | -0.294** | -0.296** | -0.263** | -0.278** | -0.288** | -0.290** |
| | (0.117) | (0.116) | (0.117) | (0.117) | (0.117) | (0.117) | (0.118) | (0.118) | (0.138) | (0.118) |
| Elementary clerical | -0.279 | -0.279 | -0.281 | -0.281 | -0.280 | -0.282 | -0.273 | -0.275 | -0.361* | -0.314* |
| workers | (0.181) | (0.181) | (0.181) | (0.181) | (0.181) | (0.181) | (0.182) | (0.181) | (0.204) | (0.185) |
| Intermediate clerical | -0.400*** | -0.400*** | -0.397*** | -0.397*** | -0.400*** | -0.401*** | -0.382*** | -0.389*** | -0.447*** | -0.380*** |
| workers | (0.110) | (0.110) | (0.110) | (0.110) | (0.110) | (0.110) | (0.111) | (0.111) | (0.132) | (0.111) |
| Advanced clerical | -0.468*** | -0.467*** | -0.452*** | -0.452*** | -0.455*** | -0.460*** | -0.450*** | -0.458*** | -0.477*** | -0.528*** |
| workers | (0.136) | (0.137) | (0.137) | (0.137) | (0.137) | (0.137) | (0.138) | (0.138) | (0.159) | (0.140) |
| Production workers | -0.354** | -0.367** | -0.349** | -0.349** | -0.348** | -0.350** | -0.310** | -0.334** | -0.318* | -0.283* |
| | (0.154) | (0.153) | (0.154) | (0.154) | (0.154) | (0.154) | (0.155) | (0.155) | (0.183) | (0.157) |
| Labourers and related | -0.514*** | -0.519*** | -0.497*** | -0.497*** | -0.501*** | -0.503*** | -0.487*** | -0.507*** | -0.640*** | -0.546*** |
| workers | (0.134) | (0.134) | (0.134) | (0.134) | (0.134) | (0.134) | (0.137) | (0.137) | (0.167) | (0.137) |
| **Level of highest education achieved (No post-school qualification = base case):** | | | | | | | | | | |
| Bachelor degree or | 0.117** | 0.119** | 0.114** | 0.114** | 0.116** | 0.117** | 0.108** | 0.111** | 0.108* | 0.110** |
| higher | (0.0532) | (0.0532) | (0.0533) | (0.0533) | (0.0532) | (0.0532) | (0.0537) | (0.0537) | (0.0622) | (0.0542) |
| Other post-school | 0.363*** | 0.369*** | 0.368*** | 0.368*** | 0.370*** | 0.366*** | 0.348*** | 0.363*** | 0.306*** | 0.353*** |
| qualification | (0.0624) | (0.0628) | (0.0624) | (0.0624) | (0.0624) | (0.0624) | (0.0625) | (0.0628) | (0.0760) | (0.0639) |
| Gender (1 if male) | 0.327*** | 0.328*** | 0.327*** | 0.327*** | 0.327*** | 0.327*** | 0.325*** | 0.325*** | 0.256*** | 0.321*** |
| | (0.0483) | (0.0483) | (0.0483) | (0.0483) | (0.0483) | (0.0483) | (0.0488) | (0.0488) | (0.0574) | (0.0494) |
| **Marital status (Married = base case):** | | | | | | | | | | |
| Previously married | -0.0451 | -0.0410 | -0.0410 | -0.0410 | -0.0413 | -0.0424 | -0.0481 | -0.0516 | -0.0313 | -0.0517 |
| | (0.0635) | (0.0635) | (0.0635) | (0.0635) | (0.0635) | (0.0635) | (0.0640) | (0.0639) | (0.0738) | (0.0648) |
| Never been married | 0.121 | 0.123 | 0.118 | 0.118 | 0.118 | 0.119 | 0.114 | 0.121 | 0.303** | 0.157 |
| | (0.106) | (0.106) | (0.106) | (0.106) | (0.106) | (0.106) | (0.107) | (0.107) | (0.124) | (0.108) |
| No. of children | -0.0405 | -0.0401 | -0.0377 | -0.0377 | -0.0385 | -0.0398 | -0.0393 | -0.0390 | -0.0149 | -0.0427 |
| | (0.0302) | (0.0302) | (0.0302) | (0.0302) | (0.0302) | (0.0302) | (0.0307) | (0.0307) | (0.0357) | (0.0313) |
| **Location of household (Major urban = base case):** | | | | | | | | | | |
| Other urban | -0.196** | -0.191** | -0.206** | -0.206** | -0.203** | -0.202** | -0.188** | -0.191** | -0.226** | -0.180** |
| | (0.0816) | (0.0815) | (0.0817) | (0.0817) | (0.0817) | (0.0817) | (0.0823) | (0.0825) | (0.0945) | (0.0831) |
| Bounded locality | -0.0877 | -0.0791 | -0.0972 | -0.0972 | -0.0961 | -0.0925 | -0.105 | -0.0935 | -0.145 | -0.105 |
| | (0.149) | (0.149) | (0.149) | (0.149) | (0.149) | (0.149) | (0.149) | (0.149) | (0.169) | (0.149) |
| Rural balance | -0.165* | -0.157* | -0.168* | -0.168* | -0.166* | -0.166* | -0.160* | -0.160* | -0.277*** | -0.200** |
| | (0.0908) | (0.0906) | (0.0908) | (0.0908) | (0.0908) | (0.0908) | (0.0915) | (0.0916) | (0.105) | (0.0929) |
| Year=1 if 2006 | -0.0389 | -0.0313 | -0.0335 | -0.0335 | -0.0378 | -0.0414 | -0.0384 | -0.0344 | -0.0357 | -0.0455 |
| | (0.0434) | (0.0436) | (0.0434) | (0.0434) | (0.0434) | (0.0434) | (0.0437) | (0.0437) | (0.0518) | (0.0442) |

(continued on next page)

**Panel D) continued**

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Qualities of country-of-origin institutions:** | | | | | | | | | | |
| Voice & | 0.241** | | | | | | | | | |
| Accountability | (0.110) | | | | | | | | | |
| Political Stability | | 0.258** | | | | | | | | |
| | | (0.117) | | | | | | | | |
| Government | | | 0.390*** | | | | | | | |
| Effectiveness | | | (0.116) | | | | | | | |
| Control of | | | | 0.390*** | | | | | | |
| Corruption | | | | (0.116) | | | | | | |
| Rule of Law | | | | | 0.342*** | | | | | |
| | | | | | (0.109) | | | | | |
| Regulatory | | | | | | 0.320*** | | | | |
| Quality | | | | | | (0.114) | | | | |
| British Legal | | | | | | | 0.133*** | | | |
| | | | | | | | (0.0468) | | | |
| Latitude | | | | | | | | 0.286** | | |
| | | | | | | | | (0.133) | | |
| School Enrolment | | | | | | | | | 0.00417* | |
| | | | | | | | | | (0.00215) | |
| Constraint on | | | | | | | | | | 0.0253 |
| Executive | | | | | | | | | | (0.0198) |
| Observations | 3146 | 3145 | 3146 | 3146 | 3146 | 3146 | 3090 | 3090 | 2248 | 3023 |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. Occupation and household location variables are added to account for specifics of a more matured generation compared to individuals aged 15 or older. Standard errors are indicated in parentheses. All models passed the LR Chi-Square test, with the LR statistic ranging from 437.3 to 659.8 and the pseudo R-squared ranging from 0.0999 to 0.109. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

## Table 2.12 Effects of additional country controls on SRFRT by immigrants aged 15 or older (panel data)

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| Age | 0.0163** | 0.0160** | 0.0157** | 0.0165** | 0.0170** | 0.0209*** | 0.0196** | 0.0285*** | 0.0295*** |
| | (0.00776) | (0.00777) | (0.00777) | (0.00781) | (0.00782) | (0.00799) | (0.00805) | (0.00946) | (0.00948) |
| $Age^2$ | -0.000324*** | -0.000322*** | -0.000319*** | -0.000328*** | -0.000332*** | -0.000372*** | -0.000358*** | -0.000403*** | -0.000411*** |
| | (0.0000789) | (0.0000789) | (0.000079) | (0.0000794) | (0.0000795) | (0.0000809) | (0.0000814) | (0.0000942) | (0.0000943) |
| Wealth | 0.00184*** | 0.00184*** | 0.00183*** | 0.00181*** | 0.00180*** | 0.00180*** | 0.00178*** | 0.00153*** | 0.00152*** |
| | (0.000187) | (0.000189) | (0.000187) | (0.000189) | (0.000189) | (0.000190) | (0.000191) | (0.000225) | (0.000228) |
| Income | 0.0354*** | 0.0360*** | 0.0381*** | 0.0390*** | 0.0380*** | 0.0380*** | 0.0380*** | 0.0368** | 0.0364** |
| | (0.0128) | (0.0128) | (0.0129) | (0.0130) | (0.0130) | (0.0133) | (0.0134) | (0.0164) | (0.0165) |
| **Employment status (Employed = base case):** | | | | | | | | | |
| Unemployed | -0.0315 | -0.0397 | -0.0410 | -0.0295 | -0.0322 | 0.0107 | -0.00740 | -0.174 | -0.182 |
| | (0.120) | (0.120) | (0.120) | (0.120) | (0.120) | (0.125) | (0.128) | (0.171) | (0.172) |
| Not in labour force | -0.226*** | -0.230*** | -0.232*** | -0.225*** | -0.222*** | -0.213*** | -0.223*** | -0.264*** | -0.261*** |
| | (0.0545) | (0.0545) | (0.0546) | (0.0550) | (0.0550) | (0.0561) | (0.0565) | (0.0671) | (0.0672) |
| **Level of highest education achieved (No post-school qualification = base case):** | | | | | | | | | |
| Bachelor degree or higher | 0.0761 | 0.0771* | 0.0720 | 0.0793* | 0.0786* | 0.0708 | 0.0698 | 0.0751 | 0.0788 |
| | (0.0465) | (0.0465) | (0.0465) | (0.0467) | (0.0467) | (0.0474) | (0.0477) | (0.0556) | (0.0557) |
| Other post-school qualification | 0.401*** | 0.396*** | 0.391*** | 0.405*** | 0.405*** | 0.395*** | 0.381*** | 0.344*** | 0.335*** |
| | (0.0476) | (0.0482) | (0.0479) | (0.0480) | (0.0480) | (0.0491) | (0.0497) | (0.0600) | (0.0605) |
| Gender (1 if male) | 0.347*** | 0.349*** | 0.346*** | 0.343*** | 0.342*** | 0.356*** | 0.354*** | 0.292*** | 0.296*** |
| | (0.0391) | (0.0392) | (0.0391) | (0.0394) | (0.0395) | (0.0402) | (0.0406) | (0.0483) | (0.0484) |
| **Marital status (Married = base case):** | | | | | | | | | |
| Previously married | 0.00274 | 0.00753 | -0.00209 | 0.000651 | 0.000496 | -0.0104 | -0.0140 | 0.0108 | 0.00855 |
| | (0.0599) | (0.0600) | (0.0600) | (0.0602) | (0.0602) | (0.0608) | (0.0609) | (0.0710) | (0.0711) |
| Never been married | 0.0934 | 0.0982 | 0.0874 | 0.101 | 0.0994 | 0.137* | 0.128* | 0.258*** | 0.259*** |
| | (0.0704) | (0.0706) | (0.0706) | (0.0712) | (0.0712) | (0.0732) | (0.0737) | (0.0889) | (0.0889) |
| No. of children | -0.0435* | -0.0422* | -0.0415* | -0.0451* | -0.0456* | -0.0457* | -0.0416* | -0.0134 | -0.0109 |
| | (0.0236) | (0.0236) | (0.0236) | (0.0238) | (0.0238) | (0.0242) | (0.0244) | (0.0289) | (0.0290) |
| Year=1 if 2006 | -0.00321 | -0.00216 | -0.00469 | -0.0119 | -0.0111 | -0.0265 | -0.00980 | -0.0606 | -0.0348 |
| | (0.0375) | (0.0375) | (0.0375) | (0.0379) | (0.0379) | (0.0404) | (0.0409) | (0.0538) | (0.0571) |

(continued on next page)

**Table 2.12 (continued)**

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| **Country-of-origin characteristics:** | | | | | | | | | |
| LN(Rule | 0.271*** | 0.237** | 0.347*** | 0.192 | 0.120 | 0.108 | -0.182 | -0.402 | 0.00589 |
| of Law) | (0.0868) | (0.110) | (0.0987) | (0.164) | (0.174) | (0.190) | (0.207) | (0.342) | (0.417) |
| Asia | | 0.0318 | | | | | | | 0.244 |
| | | (0.0758) | | | | | | | (0.188) |
| Africa | | -0.0899 | | | | | | | 0.0653 |
| | | (0.101) | | | | | | | (0.203) |
| North | | 0.118 | | | | | | | 0.388* |
| America | | (0.125) | | | | | | | (0.219) |
| South | | -0.0483 | | | | | | | 0.390 |
| America | | (0.164) | | | | | | | (0.265) |
| Europe | | 0.0273 | | | | | | | 0.115 |
| | | (0.0607) | | | | | | | (0.121) |
| Muslims | | | 0.110 | | | | | | |
| | | | (0.0826) | | | | | | |
| Buddhists | | | -0.0424 | | | | | | |
| | | | (0.0855) | | | | | | |
| Chinese | | | -0.0280 | | | | | | |
| Universists | | | (0.118) | | | | | | |
| Hindus | | | -0.0279 | | | | | | |
| | | | (0.109) | | | | | | |
| Non-religious | | | 0.377*** | | | | | | |
| | | | (0.111) | | | | | | |
| GDP | | | | 0.0250 | 0.0217 | 0.0115 | 0.0164 | 0.0326 | -0.0526 |
| | | | | (0.0310) | (0.0311) | (0.0357) | (0.0359) | (0.0477) | (0.0648) |
| English | | | | | 0.0594 | 0.0348 | 0.0751 | 0.118* | 0.138* |
| speaking | | | | | (0.0500) | (0.0549) | (0.0571) | (0.0711) | (0.0799) |
| Market | | | | | | 0.000863 | 0.000217 | 0.000588 | 0.000259 |
| capitalisation | | | | | | (0.000799) | (0.000819) | (0.00109) | (0.00135) |
| Squared market | | | | | | -0.0000023 | -0.0000012 | -0.00000132 | -5.57e-07 |
| capitalisation | | | | | | (0.00000194) | (0.00000197) | (0.00000237) | (2.76e-06) |
| Workers | | | | | | | -0.0234*** | -0.0179 | -0.0172 |
| remittances | | | | | | | (0.00723) | (0.0109) | (0.0125) |
| School | | | | | | | | -0.0000286 | 0.00349 |
| enrolment | | | | | | | | (0.00415) | (0.00507) |
| Observations | 4065 | 4065 | 4065 | 4013 | 4013 | 3885 | 3817 | 2743 | 2743 |

**Notes:** In addition to the coefficients reported above, the regressions also include controls for age, age squared, wealth, income, employment, education, gender, marital status, children and MSR. Standard errors are indicated in parentheses. All models passed the LR Chi-Square test, with the LR statistic ranging from 450.1 to 723.3 and the pseudo R-squared ranging from 0.0832 to 0.0906.*** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

### 2.5.3 Robustness checks

The robustness of the findings was explored in the same way as for equity investment. Additional country variables were added one at a time to the primary estimation with the Rule of Law as a single measure of institutional quality, and the results are reported in Table 2.12.

The results reported in columns 2 to 9 are not straightforward. The coefficient on Rule of Law, obtained by applying the ordered dependent variable model with fixed effects to the combined dataset, remains positive and significant only in the first three columns when controlling for religion and continent of origin. Findings for 2002 (Table A.9 in Appendix A) also show that the influence of informal institutions first reduces and then loses its significance when measures of country's GDP, English-speaking ability, stock market capitalisation, remittances received, secondary school enrolment and continents of origin are added. The striking observation of the 2006 estimates (Table A.10 in Appendix A) is that the coefficient on Rule of Law has turned from positive insignificant into negative significant in the last three columns. This unusual outcome, however, only confirms the absence of an institutional effect on the SRFRT behaviour of immigrants in 2006.

As stated before, the strong effect of institutional quality on financial risk-taking in 2002 also influences the combined dataset for 2002 and 2006. In a similar way, in both 2002 and panel datasets, the coefficient on Rule of Law does not remain significantly positive when additional home country attributes such as GDP per capita are included. This outcome could be explained by the fact that the correlation between Rule of Law and GDP per capita is 0.889 in 2002 and 0.880 when the panel data are used. These correlations are the highest among all country variables used in the regressions presented in Table 2.12. Hence, the redundant variable test reveals that the loss of significance of the institutional coefficient when GDP is added to the regression is due to multicollinearity[17]. Further comparison of the models shows that the inclusion of GDP does not provide any additional information for the explanation of the findings but it rather substitutes for institutional quality. Thus, it can be argued that the specification of the SRFRT model includes all the important country-of-origin attributes.

[17] The null hypotheses are failed to be rejected under Wald tests with p=0.75 for the 2002 sample and p=0.42 for the combined dataset.

### 2.5.4 Effects and persistence of institutional constraints

By analogy with equity investment analysis, it is useful to analyse how and when institutional constraints become ingrained in individuals. For this purpose, as throughout the analysis of SRFRT, the ordered dependent variable models were used. Table 2.13 presents the results of the analysis of the effect of institutional quality depending on the age at arrival in Australia, using panel data. The 2002 estimates are presented in Table A.11 in Appendix A. Data for 2006 were not used due to the lack of importance of all institutional parameters in the primary regressions.

**Table 2.13 Effects of home institutions on SRFRT by immigrants aged 15 or older, depending on their age at migration to Australia (panel data)**

| | | Age at arrival in Australia | | |
|---|---|---|---|---|
| **Variables** | **All** | **1-15** | **16-20** | **21+** |
| **No year of arrival control** | | | | |
| Ln (Rule of Law) | 0.271*** | -0.245 | 0.0490 | 0.568*** |
| | (0.0868) | (0.153) | (0.283) | (0.123) |
| Log likelihood | -3718 | -1288 | -412.8 | -1890 |
| Pseudo R -squared | 0.0871 | 0.0598 | 0.113 | 0.115 |
| Number of observations | 4065 | 1329 | 435 | 2214 |
| **Year of arrival control** | | | | |
| Ln (Rule of Law) | 0.279*** | -0.266* | 0.0514 | 0.581*** |
| | (0.0869) | (0.154) | (0.283) | (0.123) |
| Log likelihood | -3716 | -1287 | -412.5 | -1888 |
| Pseudo R -squared | 0.0876 | 0.0604 | 0.114 | 0.117 |
| Number of observations | 4065 | 1329 | 435 | 2214 |

**Notes:** In addition to the coefficients reported above, the regressions also include controls for age, age squared, wealth, income, employment, education, gender, marital status, children and MSR. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

Again, two sets of estimates were produced: one that includes a variable controlling for the calendar year of an immigrant's arrival in Australia and one that does not. In both cases (2002 and panel data), a country-of-origin effect on the self-reported preparedness to take financial risk presented in people who migrated to Australia at the age of 21 or older. However, when year of arrival controls were applied to the panel data, there was also a weakly significant negative institutional effect in people migrating under the age of 15. This unexpected negative sign of the institutional coefficient in this group was also present when individual respondents aged 15 to 35 were excluded from the sample (

Table A.12 in Appendix A).

The presence of the weak institutional influence in the SRFRT of immigrants who arrived in Australia as children under the age of 15 can be ignored for two reasons. First, this effect does not exist in 2002 and in the estimates of panel data without year of arrival controls. Second, according to the previous findings, institutions affect immigrants' SRFRT only in the 2002 dataset but not in 2006; hence, the panel data coefficients are less reliable than the 2002 coefficients as they could have been affected by the 2006 data. For these reasons, it is safe to base the conclusion about when institutional constraints become ingrained in individuals solely on the 2002 results. They suggest that the institutional effect is present only in individuals who were at least 21 years old at the time of migration, and that immigrants' perceptions about their financial risk-taking if they arrived in Australia before this age are not different from those of native-born people.

The persistence of the home-country institutional effect on SRFRT was also examined in a similar way as in the equity investment model. An additional variable accounting for the age of immigrants on arrival in Australia was added to the regression. Due to the similarity of estimates using this age-at-arrival variable to the ones without it, only the former results are reported in Table 2.14. According to the panel data and the data for 2002, the institutional effect exists in people who have spent 13 to 17 years in Australia. The data for 2002 also suggest that home institutions affect immigrants in the first seven years of their stay in Australia. The model for the trimmed dataset that excluded young immigrants under the age of 36 did not shed any more light on the explanation of this phenomenon (Table A.13 in Appendix A). In particular, the period of residence of people aged 36+ from the panel dataset who are subjected to the influence of home institutions is also 13 to 17 years, similar to the period in the 15+ panel dataset. According to the 2002 data, however, only those people from this age group are affected who have spent 13 to 27 years in Australia.

Due to the similarity with the outcome of the analysis of the equity investment decisions, these findings could possibly be driven by similar factors**.** For example, the longer influence of home institutions on immigrants aged 36 and older (13 to 27 years) than on immigrants aged 21 to 35 (7 years) suggests a change in the immigrant's profile in the 1980s. This coincided with the change of focus of Australian immigration policies initiated in 1979 and further refined in subsequent years (Walsh 2008). Migrants who arrived before then were mostly in the humanitarian and family programs, and possibly from countries with weak

institutions. Hence, their negative experience with home institutions has continued to influence their self-assessed financial risk-taking even after living in Australia for more than two decades.

**Table 2.14 Effects of home institutions on SRFRT by immigrants aged 15 years or older, depending on years spent in Australia, with age at arrival controls**

| | | Years in Australia | | | | |
|---|---|---|---|---|---|---|
| **Variables** | **All** | **1-7** | **8-12** | **13-17** | **18-27** | **28+** |
| **Panel data** | | | | | | |
| Ln (Rule of Law) | 0.238*** | 0.306 | 0.160 | 0.508** | 0.0251 | 0.0961 |
| | (0.0882) | (0.229) | (0.256) | (0.235) | (0.206) | (0.158) |
| Log likelihood | -3704 | -407.2 | -347.6 | -497.9 | -701.4 | -1646 |
| Pseudo R -squared | 0.0876 | 0.0724 | 0.112 | 0.104 | 0.105 | 0.111 |
| Number of observations | 4048 | 432 | 386 | 518 | 723 | 1974 |
| **2002** | | | | | | |
| Ln (Rule of Law) | 0.473*** | 0.730** | 0.291 | 0.621* | 0.350 | 0.245 |
| | (0.127) | (0.311) | (0.387) | (0.329) | (0.333) | (0.229) |
| Log likelihood | -1896 | -232.1 | -183.6 | -278.0 | -293.6 | -826.3 |
| R -squared | 0.0920 | 0.131 | 0.113 | 0.129 | 0.114 | 0.126 |
| Number of observations | 2104 | 268 | 215 | 298 | 313 | 1005 |

**Notes:** In addition to the coefficients reported above, the regressions also include controls for age, age squared, wealth, income, employment, education, gender, marital status, children, MSR and individual's age at arrival. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

## 2.6 Conclusions

This chapter analysed the determinants of financial risk-taking of Australian residents and examined whether financial risk-taking differs between native-born and foreign-born Australians. As this was the case, this chapter also investigated to what extent this differential can be explained by the difference in the quality of immigrants' home institutions. Financial market participation is associated with financial risk: higher for institutionally intensive investments such as investing in stock and lower for investments not involving many institutions such as opening a savings account. Thus, country-of-origin attributes such as the quality of institutions should be one of the key factors affecting the financial risk-taking of immigrants.

Equity investment is often associated with higher financial risk than other types of investments. Hence, it can serve as a measure of financial risk-taking along with an individual's own assessment of their own propensity to take financial risks. Customs and experiences with home-country institutions which have influenced immigrants can affect their investment decisions in the destination country. Consequently, participation in a more risky financial activity such as buying stocks depends to a high degree on whether immigrants to Australia had a positive experience in dealing with institutions in their home countries prior to their arrival in Australia. This indicates that there could be a close relationship between an immigrant's perception about the degree of financial risk they are able to take, their equity investment and the quality of their home institutions.

The findings are as follows: first, individuals born overseas invest less often in equities than people born in Australia; second, the quality of home institutions positively affects the probability of equity investment by immigrants; third, an individual's readiness to take financial risk, at some periods, also depends on whether they were born in Australia or abroad, with lower values reported for immigrants; fourth, a positive effect of home-country institutional quality on the self-reported financial risk-taking by immigrants in Australia is evident only in 2002 but it is so strong that it dominates the insignificant one in 2006; fifth, self-reported financial risk-taking and equity investment are not interchangeable.

The purpose of the first step of the analysis was to investigate the difference in financial risk-taking behaviour between Australian-born and foreign-born individuals. The summary statistics show a higher equity investment for native-born but similar levels of self-reported financial risk-taking for both groups. More detailed analysis of the 2002, 2006 and panel data confirmed a higher participation in the share market by native-born compared to foreign-born individuals. Similarly, analysis of the 2002 data revealed a higher self-assessed propensity to take financial risk for Australian-born persons than those born overseas, regardless of their similar mean values. This difference in the levels of financial risk which individuals are prepared to take was also evident when the panel data for 2002 and 2006 were used, despite not always being detected in the 2006 survey.

The differences in the results between the two periods can be attributed to either some event that occurred in 2006 or the cohort ageing factor. The significant positive effect of being born in Australia on the self-assessed financial risk-taking ability in 2006, obtained by excluding individuals under the age of 36, confirmed the persistence of the positive age-related effect

until people reach their early 40s. The declining propensity to take financial risk after this point could be more prominent in immigrants since it can take some time after their arrival in the country before they start participating in the Australian financial market. Thus, Australian-born and foreign-born individuals of the same age might have considerable differences in their risk-taking levels and investment activities. On the other hand, the difference in the financial behaviour between foreign-born and Australian-born individuals can be accounted for by the strength of the institutions in a home country.

The next step focused on the effects of home-country institutions on the equity investment and the self-reported financial risk-taking of immigrants in Australia. This resulted in the following findings: first, improvement in all institutional attributes except enrolment in secondary school and the geographic latitude of the country of origin positively affects the extent of equity investment by immigrants in 2002 and 2006; second, a higher preparedness of immigrants to take financial risk in 2002 is associated with a better quality of institutions in their home country, but the 2006 data do not show this tendency. In contrast with the findings for equity investment, a higher geographic latitude of the country of origin and a higher percentage of those enrolled in their home country's secondary schools encourage immigrants to take greater financial risk, in which cases the degree of institutional constraints on executive authority in their home country do not matter.

Further analysis revealed that the institutional effect on equity investment was robust to the inclusion of additional country variables. The dependence of self-reported financial risk-taking behaviour on institutional quality in 2002 was not so obvious; however, subsequent analysis showed robustness as well. Home-country institutions affect only those individuals who arrived in Australia aged 21 or older through both their equity investment decisions and their preparedness to take financial risk. The duration of institutional influence is related to the length of stay in Australia but it varies for people from different generations with the minimum detected period of seven years.

In summary, both the probability of equity investment and the self-reported financial risk-taking of immigrants depend on the quality of institutions in their home countries. The effect on equity investment is persistent in both periods, whereas it is not so obvious in individuals' own estimation of their financial risk-taking. The above conclusion and the low correlation between these two dependent variables prove that equity investment is not a perfect proxy for self-reported financial risk-taking.

Thus, a negative experience with home institutions before migration could explain immigrants' lower propensity to take financial risk compared to that of native-born individuals, which, in turn, can help in understanding the reasons for the wealth disadvantage of immigrants. Improvements to the institutional environment in an immigrant's home country influence not only that country's economy but also, through the financial behaviour of the immigrant, the financial performance of the country to which the person migrates. A greater trust in institutions by immigrants to Australia can increase their participation in the financial markets; this, in turn, can eliminate the wealth gap between native-born and foreign-born in Australia and contribute to the financial development of the country.

Immigrants' wealth, however, can be accumulated not only through financial risk but also through their ability to save. In addition, immigrants' risk preferences can also affect their saving choices and, accordingly, the above informal institutional effect may play a significant role in their saving decisions. The next chapter therefore analyses what factors affect immigrants' saving behaviour and if their home-country characteristics affect their saving habits.

# CHAPTER 3. THE SAVING BEHAVIOUR OF IMMIGRANTS TO AUSTRALIA AND HOME-COUNTRY CHARACTERISTICS[18]

## 3.1 Introduction

The mobilisation of savings is one of the important functions of the financial sector. The provision of savings facilities enables households to secure their investment future. This money can then be loaned to businesses, thus creating a favourable environment for capital accumulation and private sector development. Countries with well-developed financial systems have greater investment and financial depth mainly due to higher savings (World Bank 1989). Thus, understanding the determinants of saving rates is important for creating sound policies for a country.

The differences in countries' saving performances depend on a number of factors. According to Hussein and Thirlwall (1999), variables affecting national saving rates can be grouped into two factors: factors that affect the capacity to save and factors that contribute to the willingness to save. Each country's characteristics such as income per capita, growth and distribution of income affect the ability to save, whereas inflation and interest rates are important components that impact on the willingness to save.

As total domestic savings are affected not only by government savings but also by personal savings (Edwards 1996), cultural diversity can play a major role in defining the level of domestic savings in a country. This effect is even more prominent in countries with diversified ethnic backgrounds, such as Australia. Customs and traditions from the home countries which people bring with them when migrate can affect their way of life in Australia, and their saving behaviour in particular.

The first aim of this chapter is to investigate the determinants of saving rates of Australian residents and determine whether the saving patterns of immigrants are different from those of native-born Australians. If there is a difference, then this study progresses by exploring how the ethnic background of Australian immigrants affects their saving behaviour, and to what extent this behaviour can be explained by cross-country differences in national saving rates. Similar to the tests reported in the previous chapter, this study also tests whether other country-of-origin characteristics such as institutional quality play any significant role in the

[18] A version of this chapter has been accepted for publication by *The Australian Economic Review* Journal.

formation of personal saving habits. Household saving rates are examined with respect to both household heads and all individuals.

The results of this analysis reveal that immigrant households have lower saving rates than native-born households. This difference is present in both the household-heads-only sample and the sample including all household members. This variation in saving patterns can be at least partially attributed to the institutional environments in immigrants' home countries: the stronger the home institutions, the higher the saving rates of Australian immigrant households. Immigrants' saving rates are also related to other home-country characteristics, such as the national saving rates of their home countries; however, this is evident only at an individual level**.** The negative correlation between national saving rates in immigrants' home countries and their saving rates in Australia can be explained either by not accounting for remittances due to lack of data or by the change in immigrants' saving habits after migration. This relationship is illustrated using an example of 14 countries.

Following a review of the literature and description of the data and methodology, this chapter proceeds as follows: first, it analyses what determines the household saving rates of Australian residents, and whether there is a difference in saving behaviour between Australian-born and foreign-born households and individuals; second, the sample is limited to immigrants for testing whether there is a home-country effect on their saving habits; and finally, the saving rates of immigrants are compared to the saving rates in their respective home countries.

As before, the data used are from the HILDA Survey. Country data are sourced from international surveys and databases, such as Worldwide Governance Indicators from the World Bank.

## 3.2 Literature review

The explanation for the divergence of economic performance between countries has long been an area of interest to economists. Poor countries have lower saving rates than rich ones; however, middle-income countries tend to have the highest saving rates (Thirlwall 2003). The explanation depends on the preferred method of analysis, which can be drawn from the three broad analytical approaches to the role of savings in financial development**,** as suggested by Thirlwall (2003). First is the prior-savings approach, which is the classical approach

underlining the role of prior savings for investment. The Keynesian approach, on the contrary, emphasises investment as a prerequisite for savings. Third, the quantity theory approach suggests accumulation of resources through a government's intervention in the form of forced saving or an inflation tax.

According to Modigliani (1986), thrift has traditionally been seen as a socially beneficial act. However, since the 1930s it has been regarded as potentially disruptive to the economy, in accordance with the theory of John Maynard Keynes. From the Keynesian perspective, persistent attempts to save more reduce consumption without expanding investment, thus creating insufficient demand and, consequently, lower income and output. Hence, saving (*S)* was treated as part of consumption or as one of the items which can be purchased by using a consumer's income and entirely dependent on current income (*Y),* and not on the rate of interest as in classical theory. Correspondingly, the saving function was estimated by the linear form and has become known as the Keynesian absolute income hypothesis:

$$S = s_0 + sY$$

.

This implies that saving ratio (*S/Y)* is defined as:

$S/Y = s + s_0/Y$ , where *s* is the propensity to save and $s_0<0$ is autonomous saving or saving that is unrelated to income (Thirlwall 2003)

The saving-income relationship was the subject of extensive discussions among the economists of the 20th century. In the second half of the 1940s, the definition of saving was revised due to the emergence of the relative income hypothesis. The saving rate was explained not by the absolute income of the family but rather by its income relative to the overall mean income (Modigliani 1986). This explained the paradox of insignificant change in the saving ratio since the middle of the 19th century despite the considerable increment in per capita income, which was followed by an increase in consumption. Another important contribution to this debate in the 1950s, as stated by Modigliani (1986), was based on the discovery that consumption was not controlled by current income, but rather by normal or permanent income.

Apart from income, there are other factors affecting the level of saving, such as growth of income from the life cycle hypothesis that emerged in the 1950s (Thirlwall 2003). According to the life-cycle model proposed by Ando and Modigliani (1963), in a balanced economy

with a stable population, saving by young people completely offsets the absence of saving in old age. Aggregate savings would occur only when the income of the young population exceeds, in relative terms, the retirement income of the old generation during an economic boom. Alternatively, savings or lack of savings may result from the majority of the population being either very young or old. Hence, income growth determinants such as income growth and growth of population are important saving components. Similarly, the ratio of active to non-active households, referred to as the dependency ratio, determines savings through income growth due to population growth (Thirlwall 2003).

The current literature also stresses the importance of wealth effects in determining saving behaviour. For example, Dreger and Reimers (2006) claimed that wealth effects are essential when investigating consumption behaviour, and the inclusion of wealth considerably improves their model. The importance of wealth in private saving was also highlighted by Salotti (2010), suggesting a negative relationship between housing wealth and household saving in developed countries in the period 1980–2005, which is partially explained by the housing market boom. However, as she argued, many studies fail to account for household wealth due to lack of data.

Saving rates are defined in different ways depending on assumptions and data availability. For example, under the assumption of utility maximisation and infinite life in the life-cycle hypothesis, saving mainly reflects transitory income, which is defined as the difference between current and permanent income, and this is the same as the definition of saving under the Permanent Income Hypothesis. However, in the case of a stationary or steadily growing economy with a limited life of households, saving rates reflect change in the aggregate private wealth (Modigliani 1986).

The determinants of saving or saving rates can be broadly classified as factors affecting the capacity to save and factors affecting the willingness to save (Hussein & Thirlwall 1999). Per capita income, population growth, the dependency ratio as well as the distribution of income determine the capacity or ability to save, as argued by Thirlwall (2003). Saving rate determinants that influence the willingness to save include monetary factors such as the interest rate and the inflation rate. Willingness to save also depends on saving motives, which are different for public and private savings. Government saving depends on the willingness to tax and spend, whereas private saving depends on the price of current consumption represented by the interest rate. Some studies, however, have attached a higher importance to

factors contributing to financial development such as financial deepening and credit availability in their influence on an individual's willingness to save.

The investigation of private saving behaviour in developed countries is increasingly relevant in view of the consequences of ageing populations. The saving of a country's residents depends on numerous factors which could also be categorised as those influencing their capacity to save and those affecting their willingness to save (Al-Awad & Elhiraika 2003). Accordingly, a household's capacity to save depends on economic variables such as household income, and the willingness to save depends primarily on cultural factors. A similar grouping of the determinants of household saving behaviour into factors influencing labour market outcomes, such as educational attainment and family composition, and cultural and institutional factors, such as cultural practices and the socioeconomic strata in which individuals grew up, was suggested by Islam, Parasnis and Fausten (2010).

The recent literature tends to focus more on culture and the specific characteristics of countries of origin as possible determinants of different economic behaviour. For example, Stulz and Williamson (2003) argued that immigrants' culture can affect the financial system of their host country through their predominant values, institutions and allocation of resources. Culture was defined by Guiso, Sapienza and Zingales (2006) as customary beliefs and values that are transferred within generations of ethnic, religious and social groups. They investigated the effects of culture's fundamental aspects such as religion and ethnic origin on economic outcomes. In particular, they focused on how saving decisions vary between various religious groups and argued that cultural variables are important in understanding differences in saving rates among countries. Similarly, Carroll, Rhee and Rhee (1999) tested how countries of origin affect savings by analysing the saving patterns of immigrants to the US. Their findings suggested that the saving patterns of immigrants to the US, to a large extent, depend on which country they came from; yet these patterns do not necessarily resemble the saving rates of their home countries.

Understanding the determinants of private saving patterns of people with various backgrounds is significant for countries with a high concentration of immigrants. The relationship between people's origin and saving rates has been tested using data from different countries. For instance, Al-Awad and Elhiraika (2003), using data on immigrants to the United Arab Emirates, investigated the effect of immigrants' home countries and regions on their saving behaviour. Their findings confirmed that saving rates differ between

households with different ethnic backgrounds. Likewise, Sinning (2007, p. 21) in a study of the saving behaviour of German immigrants, who save less than native-born, argued that 'the unexplained part of the savings gap between immigrants and natives is relatively large if interest rates in the countries of origin are higher than in Germany and remittances are not considered'.

Research on the indicators of the financial integration of immigrants into Australian society has concentrated predominantly on their wealth. For instance, Cobb-Clark and Hildebrand (2008) compared the net worth and asset portfolios of foreign-born and Australian-born families. They pointed out that the wealth gap between the two is still present in Australia, albeit much smaller than in other immigrant-receiving countries. Likewise, the findings of Doiron and Gutman (2009), who studied the difference in wealth distribution of these two groups, revealed a wealth disadvantage of immigrant households in Australia.

This is in line with the argument of Islam, Parasnis and Fausten (2010) that differences in wealth are seen as the main reason for the different saving behaviour of native and foreign-born households. However, as they asserted, immigrants' wealth accumulation in Australia is unlikely to provide a comprehensive view on immigrant wealth holdings as they can have financial responsibilities and opportunities in other countries, not necessary limited to their countries of origin. For example, they may use their savings to hold assets in their home countries which could continue to build up after migration if they plan to return.

Consequently, Islam, Parasnis and Fausten (2010) explored whether there are systematic differences in the saving behaviour between immigrant and native households in Australia, and what might be the potential determinants of any observed differentials. By using data from four Australian household expenditure surveys, they explained the observed saving gap in favour of native households by labour market outcomes. At the same time, they suggested that immigrant households tend to save more, when demographic and other characteristics are controlled for, across the entire savings distribution, with higher values of savings observed at the upper end of the distribution. This research, however, did not account for the cultural and institutional dimensions of the saving behaviour of the immigrant population and predominantly concentrated on household socio-economic characteristics, thus restricting the range of possible factors affecting the saving behaviour of Australian residents.

This chapter contributes to the research described above by investigating the determinants of the saving rates of Australian residents by using a different dataset, and goes further by

investigating how the ethnic backgrounds of Australian immigrants affect their saving behaviour. With this purpose, a similar model to the one used by Al-Awad and Elhiraika (2003) was applied to the HILDA data. Carroll, Rhee and Rhee (1999) argued that saving rates differ between different immigrant groups, suggesting the presence of country-of-origin effects. Nevertheless, the personal saving rates obtained by them differ from the national saving patterns of their respective countries, and thus the international saving rates differential remains unexplained. The contribution of this study to the research on the determinants of economic performance includes a comparison of the estimated personal saving rates of Australian immigrants with the national saving rates of their home countries.

As discussed above, various factors affecting the saving rate have been discovered, and this has led to the development of various approaches to measuring it. This study integrates these approaches and selects the life cycle permanent income hypothesis for consumption as a foundation for the saving model. This model alone cannot explain all the variations in private saving rates across countries, hence, additional variables are added to the regression. Thus, private saving behaviour in this research is defined as a function of following variables: permanent income; personal factors affecting permanent income, such as age and occupation; dependency ratio; wealth; and country-of-origin characteristics.

Additionally, the research reported in this chapter adds to the findings described in the previous chapter on the importance of institutions for financial development. According to this research, the quality of institutions affects the Australian financial markets through the financial risk-taking behaviour of Australian immigrants and their equity investment decisions. Amuedo-Dorantes and Pozo (2002) argued that immigrants' risk preferences also affect their saving choices; hence, this informal institutional effect may play a significant role in their saving decisions. To test this hypothesis, country-of-origin attributes in this part of the study include institutional quality attributes in addition to general economic indicators such as GDP and the national saving rate.

## 3.3 Data and methodology

To the best of the author's knowledge, no study has ever been carried out using actual measured saving rates. These have always been imputed using other variables depending on the data available. For example, because Islam, Parasnis and Fausten (2010) used cross-sectional Australian data, they focused on out-of-pocket saving defined as the difference

between consumption and disposable income. A similar definition was used by Al-Awad and Elhiraika (2003) for their study of savings by immigrants to the United Arab Emirates, due to the country's laws not allowing foreigners to possess fixed assets and hence their wealth holdings data being irrelevant. A different approach was used by Carroll, Rhee and Rhee (1999) for their US study. The absence of information about consumption in their data does not allow an estimation of personal saving as suggested above. Similarly, since their data from the 1980 and 1990 Censuses of Population and Housing were obtained from a subsample which is randomly selected every ten years, it is not possible to follow individuals across different periods. As a result, they estimated what the wealth level would have been in 1990 for the people observed in 1980 and what the wealth level would have been in 1980 for the people surveyed in 1990. The imputed data were then used for the estimation of an individual's saving as the change in wealth between two periods.

The method of defining saving in this research is severely constrained by data limitations. Despite HILDA's survey period commencing in 2001, information on household wealth is only available for 2002 and 2006. As suggested by Carroll et al. (1999), the panel structure of these data allows an estimation of personal saving as the increase or decrease in wealth between 2002 and 2006. This change in household wealth was considered for defining saving, but application of the model using saving defined this way failed to produce any significant results. The possible explanation is that the wealth variable in HILDA includes increases in the value of assets such as the family home, and saving, defined as change in household wealth, might be highly influenced by changes in property values. Furthermore, as argued by Engelhardt (1996), self-measured values of houses reported by home-owners are not always accurate and tend to be over-estimated. Household wealth also includes windfalls such as inheritances, winnings and termination payments, which arguably make its change a poor measure of household saving.

Fortunately, HILDA's rich dataset includes household-level data on income in each year surveyed and data on expenses since 2005. Hence, following the approach by Al-Awad and Elhiraika (2003), saving ($S$) in this study is equal to the difference between total disposable household income ($Y$) and total household expenditure ($E$). Accordingly, the saving rate ($s$) used in this study is calculated by using these savings divided by total household disposable income: $s = \frac{S}{Y} = \frac{Y - E}{Y}$ .

Similarly to the usage by Carroll, Rhee and Rhee (1999) and Al-Awad and Elhiraika (2003), observable household disposable income in this research is treated as permanent disposable income plus a transitory component. As argued by Carroll (2001), in the presence of uncertainty about meaningful labour income, Friedman's permanent income hypothesis describes the optimal behaviour of optimally impatient consumers better than the later maximising versions. According to Carroll, Milton Friedman's definition of permanent income that determines current spending is the mean of expected income in the near future (Carroll 2001). The measure of permanent income can also be obtained by using past income plus income change from the past to the current period (Ramrattan & Szenberg 2008). Transitory income, which is defined as the difference between current and lifetime income, has a negligible effect on consumption, as asserted by Ramrattan and Szenberg (2008). Since this study is limited to the investigation of factors affecting saving behaviour in 2006 (as discussed in the subsequent section describing personal data), the annual disposable income for 2006 is treated as permanent income.

Based on data availability, household expenditure in this research includes everyday expenses, rent and mortgage payments as well as annual depreciation of durable goods such as vehicles and computers. Although it is acknowledged that capital gains can influence saving through the so-called 'wealth effect' (Islam, Parasnis & Fausten 2010), capital gains and losses are not included in the estimates of savings due to the difficulty of identifying unrealised and realised gains. Expenditure in this study does not include information about remittances as this information was not collected by HILDA. Hence, there is a possibility that the household expenditure in HILDA of those immigrants who transfer money overseas could be lower than their actual expenditure, which could result in their savings being overestimated. A list of all expenditure items is given in Table B.1 in Appendix B.

This study was carried out for both households and individuals and for two age groups. The sample was initially limited to households for consistency with other studies investigating the saving behaviour of immigrants (Al-Awad & Elhiraika 2003; Carroll, Rhee & Rhee 1999; Islam, Parasnis & Fausten 2010; Sinning 2007). Carroll, Rhee and Rhee (1999) argued that the saving objectives of younger immigrants in the US, who are most likely to be temporary residents, might not be the same as those of long-term residents. Hence, to remove observations related to younger respondents who might save for different reasons than their older and more settled counterparts, the sample was restricted to households with the heads defined as household members aged 36 or older who earn the highest income. However, due

to the different profile of Australian immigrants, the extended sample including young household heads aged 16 to 35 was also considered. Similarly, for the purpose of comparison, the sample which includes all individuals, and not just household heads, was also analysed.

Of the two models employed in this part of the study, the first model was used for determining if Australian residents born overseas have lower saving rates than their Australian-born counterparts:

$$S_i = \alpha_o + \alpha_1 X_i + \alpha_2 R_i + \varepsilon_i \quad , \qquad (3.1)$$

where $S_i$ is a saving rate of household $i$ that is defined as the ratio of household saving to the total disposable income; $X_i$ is a vector of household characteristics affecting savings such as household income, wealth, age, gender, occupation and education of the household head; and $R_i$ is a dummy variable that is equal to 1 if the household head was born in Australia and 0 otherwise.

The application of the second model was justified because the saving behaviour of immigrant households was, in fact, found to be different from that of native-born households. This model tested the significance of the cultural effects in contributing to this variation, using the immigrant-only sample:

$$S_i = \alpha_o + \alpha_1 X_i + \alpha_2 Z_i + \varepsilon_i \quad , \qquad (3.2)$$

where, as before, $S_i$ is the saving rate of an immigrant household $i$ and $X_i$ is a vector of household characteristics; and $Z_i$ is a vector of country-of-origin characteristics including GDP, national saving rate, the dependency ratio and the quality of institutions.

These two models were also applied to the extended dataset that includes all household members and not just household heads to determine if different household members have different saving patterns. Similarly to the investigations reported in Chapter 2, individual characteristics included age, gender, wealth, individual income, education and employment variables. Two additional variables accounting for the different contributions by different household members to the total amount of household savings were: a dummy variable representing whether or not an individual is a household head and a dummy variable representing whether or not this individual is the spouse of a household head. All models were estimated using STATA 11.

A two-stage least squares (2SLS) procedure was used as a result of the endogeneity of household income and household wealth. The Hausman test, carried out to test if there is a correlation between the explanatory variables and the error terms, confirmed the endogeneity of these two variables in agreement with the previous studies (Al-Awad & Elhiraika 2003). Hence, the estimation of the models (3.1) and (3.2) using the ordinary least squares method will be biased and inconsistent, unlike the more reliable instrumental variable estimations. The instruments used here are the lagged value of household disposable income in 2005, the previous year, and the lagged value of household wealth in 2002, as this is only surveyed every four years. Although there are concerns about the credibility of these instrumental variables, such as the possible correlation of lagged income with unobservable determinants of the saving rate that are endogenous to current income, these were the best possible instruments within existing data constraints. The STATA post-estimation test measuring the relevance of the excluded exogenous variables was carried out, and the results confirmed that these are good instruments. Similarly, personal disposable income for 2005 and household wealth for 2002 were also used as instruments when saving models were applied to individuals. The results of the endogeneity tests are reported in Table B.2 in Appendix B.

### 3.3.1 Personal data

The data on individuals were taken from the HILDA Survey and limited to observations in 2006 as this is the only year that has questions on household expenditure and household wealth. Household expenditure was required for the calculation of the saving rate, and household wealth was used as an independent variable. Although household wealth was surveyed in 2002 as well, there were no questions on household expenditure in that year; hence 2002 data were used for instrumental variables only. Data collected in 2006 consists of 17,454 respondents or 7,139 households. All personal variables with definitions are presented in Table B.1 in Appendix B.

Saving models were first applied to household heads only and then to all household members. Both samples were applied to two age groups: aged 15 or older and aged 36 or older. As in the previous analysis, independent personal variables included variables influencing a financial situation directly, such as household wealth and income, and those that could affect the household budget indirectly, such as an individual's education and their employment

status[19]. Wealth, financial income, education, gender, marital status and Major Statistical Region (MSR) were used as independent variables in both cases, although household income was used in the first population sample and individual income in the second. A variable accounting for the number of household members was included in both, assuming that total household saving depends on how many people are in a household.

It is assumed that the household heads, being the major income providers, are more settled, with steady occupational careers, than the other household members are. Hence, the first dataset, which was used for identification of factors affecting the saving rate at the household level, also included occupational status and household location variables. Other studies have also used these individual characteristics to describe saving behaviour (Al-Awad & Elhiraika 2003; Carroll, Rhee & Rhee 1999). In addition, as suggested by Al-Awad and Elhiraika (2003), the household dependency ratio was added as another household characteristic into a household-level model to account for the effect of having household members who do not earn any income.

The second dataset containing all household members included two additional dummy variables: the first dummy variable represented whether or not an individual is considered as a household head, and the second dummy variable represented whether or not this individual was the spouse of a household head. The amount contributed to total savings depends not only on the income of each household member but also on the household responsibilities of each member. Being a parent who is the household head or the spouse of the household head, for instance, entails the responsibility of providing for children and hence, they could be expected to have lower savings.

As discussed above, the saving rate in this study is equal to the share of net household income after paying all household expenses from total disposable income. For meaningful estimates, however, income and expenditure variables needed to be modified. The high proportion of missing responses under household expenditure suggested a diversified approach to handling these variables. All missing values of household expenditures were treated as zero, except for inevitable expense items such as groceries, public transport and taxis, electricity bills and gas bills. Similarly, missing values of annual rent and mortgage payments were treated as zero,

[19] Since the selection of household heads is based on the highest income, meaning that most of them are employed, employment status becomes irrelevant for this group and, accordingly, was excluded from the household-level model. The employment variables, however, were still included in the model covering all individuals.

assuming that those respondents who did not pay rent were house owners and vice versa. Household income and personal income were also subject to certain restrictions. Observations with negative values of household income and private disposable income were deleted as, in this case, consistent saving rates could not be calculated.

After these manipulations, the saving rates then derived were taken on the extreme values at either end of the distribution such as -21,948 per cent as the minimum value and 100 per cent as the maximum value. This implied the need for an additional trimming of the sample since expenses that are thousands times greater than income, on one hand, and zero expenditures, on the other hand, are very unlikely and can cause misleading results. Thus the sample was winsorised to 96 per cent with the new lower and upper limits of -130 per cent and 79 per cent respectively and the mean value of 30 per cent.

This limitation, along with other restrictions, negatively affected the size of the sample used. Trimming the sample to individuals aged 15 and over with the non-missing data on countries of origin reduced the sample size to 10,196 residents. Further restriction to households heads aged 36 and over trimmed the sample to 3,869 households.

The characteristics of the immigrant and native-born individuals surveyed in 2006 are compared in Table 2.1 (Panel B) in Chapter 2. The average immigrant is eight years older, has slightly fewer children in the household and is better educated than the average person born in Australia. Compared to individuals born in Australia, immigrants have a similar percentage of men and women, a higher percentage of married individuals, a lower employment rate and a higher income. Unlike 2002, the difference in the mean value of wealth between immigrant and native-born households is not significant in 2006.

The difference in household saving rates is an area of particular interest in this research. Hence, the mean values of the saving rates of foreign-born and Australian-born households with the heads aged 36 years or older are also compared. The results reveal a difference in saving rates in favour of native-born households (29.26 per cent per annum as opposed to 25.59 per cent saved by an average immigrant household).

Basic immigrant characteristics including year of and age at arrival in Australia and continent of origin are also summarised in Chapter 2. About 23 per cent of respondents migrated to Australia before 1964. The remaining three quarters spread over the following period from 1965 to 2006 with the lowest number migrating in 1975–1979. The proportion of immigrants

is the highest among adults older than 20 (53 per cent) and the lowest for children aged 11 to 15. The majority of the sample originated from Europe and about a quarter of all respondents were born in Asia.

### 3.3.2 Country data

The personal variables mentioned above affect the capacity to save by Australian households, whereas their willingness to save is affected by country-of-origin attributes, analogous to the existing studies (Al-Awad & Elhiraika 2003; Hussein & Thirlwall 1999). Other possible determinants of the willingness to save such as the interest rate and inflation are the same for all households. With the intention of finding all possible determinants of Australian household saving habits, all the country variables used in the estimations reported in Chapter 2 were also tested for their possible connection with the saving rate. They included factors specifically reflecting institutional quality as well as other home-country characteristics.

As mentioned in Chapter 2, the variables representing the quality of home institutions in this study were derived from international surveys and databases. For example, the Aggregate Governance Indicators including Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law and Control of Corruption were taken from the Worldwide Governance Indicators database created by the World Bank. These indicators measure perceptions about the quality of a country's government, such as freeedom of expression, respect for civil liberties, and free and fair elections, measured by Voice and Accountability. They were originally scored from -2.5 to 2.5 but were converted into positive numbers by adding 4 and taking logarithms. Likewise, Constraint on the Executive, which measures the degree of institutional constraints on the decision-making powers of chief executives from lowest 1 to highest 7, was taken from the Polity IV Project database (INSCR 2009) as before.

Other country variables used in this study included religion from the World Christian Encyclopedia (2007), English language speaking from Bleakley and Chin (2004), countries' geographic latitude and a variable reflecting whether a country has a British legal system from La Porta et al. (1999), as well as variables such as GDP, market capitalisation, workers' remittances and school enrolment from the the World Development Indicators (World Bank 2010). Since these variables are assumed to be correlated with the quality of institutions and some of them also influence the financial risk-taking ability of immigrants, it was also tested

whether they affect immigrants' saving rates, as saving is directly related to financial wealth accumulation.

Summary statistics of the above home-country variables are presented in Table A.3 in Appendix A. Similarly to the analysis described in Chapter 2, the effect of each country attribute on the household saving rate was studied separately due to a high correlation between these measures.

This research also tested the relationship of household saving rates with the home country's dependency ratio. According to Keynes cited in Modigliani (1988), the 'foresight' saving motive includes provision for the anticipated future expenses of an individual or their family which are different from the current costs and include expenses related to old age, education and provision for dependents. Hence, the home country's dependency ratio reflecting the proportion of the dependent population to the total population of working age can also affect saving habits. A relationship between the household saving rate and the proportion of old dependents, in particular, can confirm the life-cycle hypothesis, according to which consumption in old age with accompanying lack of saving motivates current saving. This old-age dependency ratio varies from a minimum of 4.16 per cent in Oman to a maximum of 30.98 per cent in Japan with the average value being 19.17 per cent among 12,811 respondents from 105 countries. The old-age dependency ratio in Australia is 19.40 per cent.

An additional country attribute which was also specific to this part of the study was a country's gross adjusted saving rate as a percentage of Gross National Income (GNI). This variable was also taken from the World Development Indicators and was included to test if household saving habits depend on the home-country saving rate, and to find evidence of the importance of country-of-origin effects in explaining the differential of national saving rates. According to Bolt, Matete and Clement (2002), gross national savings used for adjusted net savings calculation are defined as the difference between GNI and the sum of public and private consumption. Consequently, the gross adjusted saving rate (hereafter referred to as the 'national saving rate') represents the proportion of gross national savings from GNI and is available for 94 countries with 12,707 respondents. The Australian saving rate, defined this way, is equal to 29.97 per cent, which is close to the national saving rate mean value of 28.22 per cent. Fiji has the minimum saving rate of -3.17 per cent and the highest saving rate of 72.42 per cent is reported in Equatorial Guinea.

The complete list of independent country variables with definitions is presented in Table B.3 in Appendix B.

## 3.4 Empirical results

The first goal of the research reported in this chapter was to identify what determines the saving behaviour of Australian residents, and whether this behaviour differs between residents born in Australia and those who migrated from overseas. Differences were detected, so it was subsequently tested if and what immigrants' country-of-origin characteristics could have caused these differentials. The investigation of country-of-origin effects was divided into analysis of the effect of home institutions and other home-country characteristics, such as a country's GDP and its national saving rate. The assessment of the outcomes was completed with the comparison of the domestic saving rates of immigrants in Australia and the national saving rates in their respective countries of origin. The Wald Chi-Square statistic was used to test whether at least one of the regression coefficients in the model was not equal to zero and all models passed this test.

### 3.4.1 Difference in the saving behaviour between Australian-born and foreign-born residents: households and individuals

The model (3.1) estimated using the 2SLS procedure was applied first to the sample of household heads and then to the extended dataset that included all household members. As suggested by Table B.2 in Appendix B, household income in 2005 and household wealth reported in 2002 are good instruments for endogenous household income and wealth when the dataset is limited to households, and personal income in 2005 and household wealth from the 2002 dataset are suitable when the models are applied to individuals.

The main conclusion drawn from the results in Table 3.1 is that saving rates are higher for Australian-born households. In particular, Australian-born household heads aged 15 or older save 3.02 per cent, and those aged 36 or older save 2.43 per cent more per annum than their foreign-born counterparts. Other personal parameters, except total number of household members, also play important roles in forming the saving habits of Australian households in both datasets. For example, although the number of household members is not significant, their higher accumulated income increases household saving rates. Understandably, a higher dependency ratio suggests additional expenses and lower saving rates. Likewise, married

individuals are likely to be paying a house mortgage and higher household expenses and to have lower saving rates than their single counterparts.

Household wealth has a negative effect on household saving rates in both datasets, which can be explained by equity and house value being included in household wealth. The increase in net worth encourages households to further increase their borrowing due to new lending opportunities to maximise the benefits of consumption. In fact, as argued by Salotti (2010), the increase in housing wealth and government savings in developed countries for the period 1980–2005 caused household savings to decline.

Surprisingly, education also has a negative effect on the saving behaviour of households. In line with this, the intermediate clerical workers, production workers and labourers in the 36+ dataset save more than do the possibly more educated managers and administrators (base category). With the inclusion of younger households, this difference is prominent only between labourers and the base category. Although it is generally expected that people with a higher education earn a higher income and, accordingly, have higher savings, this, according to Morisset and Revodero (1995), might take time to be realised due to the lagged effect of education of approximately five years. Younger household heads are more likely to be still either paying for their education or freshly graduated, unless they do a job that does not require any qualifications such as unskilled labour. Another reason for the negative link between education and saving rates, as Morisset and Revodero argued, could be the reduced need for precautionary savings as educated people are less likely to be unemployed. If this group's outlook can be called optimistic, then this is also consistent with the research by Harris, Loundes and Webster (2002), who argued that economic optimism is negatively correlated with household savings.

**Table 3.1 Factors affecting saving rates of Australian households (household heads only)**

| Variables | **Household heads 15 years or older** | **Household heads 36 years or older** |
|---|---|---|
| Household income | 0.293*** | 0.239*** |
| | (0.0253) | (0.0275) |
| Wealth | -0.000462*** | -0.000210** |
| | (0.0000881) | (0.0000904) |
| Dependency ratio | -0.115*** | -0.128*** |
| | (0.0407) | (0.0472) |
| Age | -0.00138 | -0.00852** |
| | (0.00176) | (0.00374) |
| Age squared | 0.0000644*** | 0.000116*** |
| | (0.0000178) | (0.0000307) |
| Gender (1 if male) | 0.00850 | 0.0246** |
| | (0.0106) | (0.0123) |
| No. of children | -0.00454 | -0.0238* |
| | (0.0109) | (0.0131) |
| No. of persons | 0.00451 | 0.00897 |
| | (0.00815) | (0.00933) |
| **Marital status (Married = base case):** | | |
| Previously married | 0.0439*** | 0.0355** |
| | (0.0148) | (0.0162) |
| Never been married | 0.0382** | 0.0673*** |
| | (0.0176) | (0.0224) |
| **Level of highest education (No post-school qualification = base case):** | | |
| Bachelor degree or higher | -0.0259** | -0.0280** |
| | (0.0109) | (0.0124) |
| Other post-school qualification | -0.0320** | -0.0332** |
| | (0.0147) | (0.0165) |
| **Occupation (Managers and administrators = base case):** | | |
| Professionals | 0.00206 | 0.0248 |
| | (0.0169) | (0.0194) |
| Associate professionals | -0.0128 | 0.0241 |
| | (0.0190) | (0.0220) |
| Trades persons | -0.00533 | 0.0199 |
| | (0.0196) | (0.0232) |
| Advance clerical workers | -0.0114 | 0.0293 |
| | (0.0337) | (0.0378) |
| Intermediate clerical workers | 0.0211 | 0.0501** |
| | (0.0184) | (0.0222) |
| Production workers | 0.0197 | 0.0452* |
| | (0.0218) | (0.0248) |
| Elementary clerical workers | -0.0245 | 0.0524 |
| | (0.0289) | (0.0359) |
| Labourers | 0.0391* | 0.0570** |
| | (0.0225) | (0.0270) |
| **Born in Australia** | 0.0302*** | 0.0243** |
| | (0.0111) | (0.0121) |
| Constant | -3.014*** | -2.238*** |
| | (0.257) | (0.323) |
| Observations | 4634 | 3598 |
| Root MSE | 0.299 | 0.300 |
| R-squared | 0.263 | 0.237 |

**Notes:** The dependent variable is the household saving rate. In addition to the coefficients reported above, the regressions also include MSR and location of household controls, which are not reported due to low significance. The sample is limited to household heads who have non-missing data on country of origin with the household saving rates above -1.28 and below 0.79. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

Although most of the variables have similar coefficients in both age groups, there are some differences. For example, age, gender, number of children and a few occupational variables lose significance when household heads aged 15 to 35 are added to the dataset. Household heads in this age range are likely to have younger children who require lower expenses than the children of their older counterparts. They are also most likely to still be studying; hence, they do not yet have a primary occupation. The effect of age on the household saving rate in the 15+ dataset is positive. However, in the 36+ sample the saving rate starts to increase once the household head reaches 37 years. Likewise, only among household heads aged 36 and older, the saving rates are lower for female household heads. This is consistent with the argument presented in a number of studies (Conley & Ryvicker 2004; Fisher 2010) that female respondents have greater expenses in proportion to their income, and hence they save lower amounts. But this is not applicable to household heads aged 15–35 as they, regardless of being male or female, probably do not bother about saving yet.

Table 3.2 presents the results of a similar household saving model applied to the extended dataset of all individuals and not just household heads to analyse which individual characteristics affect household saving rates. Similar to the accumulation of savings at the household level, personal income plays a significantly positive role and the number of resident children plays a significantly negative role on the contribution by household members to total household saving. Since using personal income is likely to already account for an individual's gender, this variable is no longer significant. Similarly, a positive association of age with the household saving rate detected earlier is now captured by using personal income instead of household income. Only household saving rates of individuals aged 46 and older in the 36+ dataset remain positively associated with their age, with the saving rates decreasing until this turning point. At the same time, using personal income gives importance to the number of household members. For example, unless the individual is a household head or the spouse of a household head, a higher number of members in the individual's household means a higher amount contributed to the total household income, resulting in higher aggregate savings. This saving level, in general, does not decrease even if a household member becomes unemployed, possibly due to the availability of unemployment benefit under the Australian social security system, but the saving level is lower for households with members who are not in the labour force.

**Table 3.2 Factors affecting saving rates of Australian households (all household members)**

| Variables | **Individuals 15 years or older** | **Individuals 36 years or older** |
|---|---|---|
| Income | 0.0256*** | 0.0371*** |
| | (0.00350) | (0.00747) |
| Wealth | 0.0000153 | 0.000118** |
| | (0.0000499) | (0.0000527) |
| Age | 0.00154 | -0.00834*** |
| | (0.00133) | (0.00317) |
| Age squared | 0.00000377 | 0.0000923*** |
| | (0.0000131) | (0.0000264) |
| Gender (1 if male) | 0.00618 | 0.00872 |
| | (0.00760) | (0.00952) |
| No. of children | -0.0494*** | -0.0767*** |
| | (0.00574) | (0.00781) |
| No. of persons | 0.0292*** | 0.0388*** |
| | (0.00393) | (0.00560) |
| Head | -0.204*** | -0.167*** |
| | (0.0165) | (0.0221) |
| Spouse | -0.152*** | -0.104*** |
| | (0.0175) | (0.0225) |
| **Marital status (Married = base case):** | | |
| Previously married | -0.0635*** | -0.0485*** |
| | (0.0125) | (0.0139) |
| Never been married | -0.0906*** | -0.0186 |
| | (0.0136) | (0.0197) |
| **Level of highest education (No post-school qualification = base case)** | | |
| Bachelor degree or higher | -0.0181** | -0.0262*** |
| | (0.00850) | (0.00986) |
| Other post-school | 0.0244** | -0.00475 |
| qualification | (0.00980) | (0.0118) |
| **Employment status (Employed = base case):** | | |
| Unemployed | -0.0357 | -0.0477 |
| | (0.0221) | (0.0347) |
| Not in labour force | -0.0654*** | -0.0969*** |
| | (0.0106) | (0.0130) |
| **Born in Australia** | 0.0389*** | 0.0353*** |
| | (0.00882) | (0.00985) |
| Constant | 0.0763* | 0.174 |
| | (0.0441) | (0.127) |
| Root MSE | 0.320 | 0.320 |
| R-squared | 0.0868 | 0.104 |
| Observations | 8779 | 6016 |

**Notes:** The dependent variable is the household saving rate. In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. **:** The sample is limited to individuals who have non-missing data on country of origin with the household saving rates above -1.28 and below 0.79. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

The lower contribution towards household savings by household heads or their spouses is attributable to their higher expenses including interest and mortgage payments. Their distinction from other household members could also explain why the negative effect of being married compared to being single loses its significance, since household heads and their spouses are responsible for the main share of family expenses. The saving rates of the

households with married individuals are now even higher than those of the households with previously married and never been married for the 15–35 age group individuals. Married people have the ability to share their household expenses with their partners and save more. This is consistent with the findings of Osili and Paulson (2006), who argued that being married has a positive impact on savings account ownership. The biggest share of expenses of the married household heads – the highest income earners in the household – however, outweighs these benefits, as can be seen in Table 3.1.

In contrast with the household level results, increase in household wealth is associated with the higher household saving rate in the 36+ dataset, and there is no such association in the 15+ dataset. As argued earlier, the household saving rate is lower for households with high debt – one of the determinants of the household wealth. On the other hand, it is expected that mortgage and interest payments are primary responsibilities of the household head – the highest income earner in the household – and their spouse. Hence, by specifying the status of the head and their spouse it is possible to separate this negative debt effect from the otherwise positive wealth effect. This wealth effect, however, loses its significance when the dataset is extended to include younger household members aged 15-35 years. Younger individuals, on average, accumulate less wealth, so adding 2,700 extra observations with low wealth values could cause this variable to become insignificant.

As before, the level of the highest education of household members matters for the household saving rates; however, the effect of having a post-school qualification lower than, and different from, a bachelor degree changes from negative to positive for household members aged 15 and older. This can be explained by the distinction of household heads and their spouses who have not only the highest income in the household but also the highest level of expenses, including expenses for the education of their children. Hence, younger household members, who are not household heads and their spouses, do not experience the lagged effect of obtaining post-school qualifications such as trade qualifications, which are not very costly anyway. The higher level of responsibilities of household members aged 36 and older, however, makes obtaining any post-school qualification more financially difficult and challenging. Obtaining a bachelor degree or higher is a longer and more costly process than obtaining lesser post-school qualifications and, in most cases, requires a contribution by the children as well as their parents. This may be the reason for the negative association of holding a bachelor degree or higher by household members in both age groups with the household saving rate.

Finally, households with native-born members aged 36 or older save 3.53 per cent more than those in the same age group who were born abroad. This difference is even higher when individuals who were aged 15 to 35 years at the time of interview are included in the sample. This contradicts the findings of Islam, Parasnis and Fausten (2010), who observed the tendency of immigrant households to save more than native households when they used Australian expenditure surveys. On the other hand, the immigrants' lower propensity to save detected in this study is consistent with the findings for immigrant households in Germany who on average save 6-10 percentage points less than native-born Germans (Sinning 2007). However, once the remittances of temporary immigrants are treated as savings in their home countries, the savings gap between them and comparable German-born household heads disappears. Due to the absence of information on remittances from Australia, a similar analysis cannot be applied in this study. It is evident, however, that if immigrants' remittances were accounted for, their savings, defined as the difference between their after-tax income and consumption, would even be lower. Accordingly, the difference between the savings of immigrant households and native-born households in this analysis could even be greater.

Despite the limitation described above, features of the data used in this research allow a more detailed analysis of the reasons for this savings gap in favour of Australian-born households. In addition to demographic characteristics, the possible influences of being born in a different country with a different institutional environment on immigrants' saving behaviour was investigated. The following analysis limited the sample to immigrants; it started by investigating home-country institutional effects and proceeded by including other home-country variables.

### 3.4.2 Country-of-origin effect on household savings

Country-of-birth variables were separated into institutional characteristics and other home-country characteristics. Institutional variables were the same as reported in Chapter 2. Other home-country characteristics included the national saving rate, a country's dependency ratio, GDP per capita, whether or not English was the official language, market capitalisation, workers' remittances received by the country, and the country's dominant religion. Due to the fact that national saving rates may vary greatly from year to year, the average national saving rate of the country for the period 2004–2006 was used in addition to the national saving rate for 2006.

The analysis of the institutional effect on the saving behaviour of immigrants was carried out using model (3.2). Analogous to the previous section, this model was first applied to the dataset which included young household heads aged 15–35 and then it was applied to the dataset without them. This was followed by a similar analysis applied to all household members. As before, 2SLS procedure was used to control for endogeneity of income and wealth with household wealth reported in 2002 and household or individual income in the previous year being used as instruments. Even though, when tested, household wealth appeared to be exogenous using the reduced sample, for consistency, it was treated as endogenous[20].

The results revealed a positive relationship between the saving rates of immigrant households with heads aged 15 or older and all six Aggregate Governance Indicators as well as British legal origin as presented in Table 3.3 (Panel A). In addition, the saving behaviour of household heads aged 36 and over is also positively influenced by the home country's geographic latitude (Table 3.3 [Panel B]). The ratio of children who are enrolled in school to the country's population of the corresponding official school age and Constraint on Executive do not play a significant role in the propensity of immigrant households to save. According to the findings reported in Chapter 2, secondary school enrolment also does not have a significant effect on equity investment by Australian immigrants. Constraint on Executive, in turn, is not important in the assessment of self-reported financial risk-taking by immigrants. Since the financial wealth accumulation of immigrants is not affected by these variables, there is probably no influence on their saving rates as well.

These findings confirm that effective institutional arrangements are conducive to an increase in financial market participation. A positive relationship between Aggregate Governance Indicators, such as Rule of Law or Corruption Control, and the saving rates of immigrants in Australia is consistent with the previous results on the importance of trusting institutions for financial development. According to Kaufmann, Kraay and Mastruzzi (2008a), individuals and enterprises base their investment decisions on their opinions about the investment environment and government performance. The profit from participation in the Australian financial market is supposed to improve the household financial situation and, accordingly, increase the household's savings. The positive institutional environment in Australia can also encourage people to open savings accounts in the country's financial institutions. Home-

[20] There is no significant change in the results of the regression even if wealth is treated as exogenous.

country institutional environment can also influence immigrants' perceptions about the safety of financial institutions and, accordingly, their saving decisions in their host countries.

The significance of the positive effect of geographic latitude on saving rates could be explained by the higher saving rates of Australian immigrants originating from countries located north of the equator, such as the US and Germany. In accordance with the views expressed by Osili and Paulson (2008) and Rodrik, Subramanian and Trebbi (2004), countries located north of the equator tend to have stronger institutions. In particular, the former colonies of European countries that have more effective institutional arrangements due to different colonisation policies tend to be more distant from the equator (Osili & Paulson 2008).

As before, the effect of institutional variables was also investigated with respect to individuals aged 15 or older and 36 or older. The 2SLS procedure was applied here as well, with the individual's household wealth in 2002 and their personal income in 2005 being used as instruments. Table 3.3 (Panel C) presents the results from model (3.2) applied to the extended dataset with young individuals. These results are similar to the ones for the immigrant households except that the coefficient on the home country's executive authority constraints has become positive and significant. In other words, a higher level of constraint on the executive powers in the home country is associated with a higher household saving rate in Australia. This institutional factor supposedly influences saving by encouraging financial market participation through its long-run effect on investment, growth and financial development (Osili & Paulson 2008).

The exclusion of young individuals caused some changes to the above outcome. As shown in Table 3.3 (Panel D), all institutional variables, including enrolment in secondary school, have become significant. The higher the ratio of children enrolled in a country's secondary school, the higher the household saving rate of the individual from this country. This is consistent with the conclusion arrived at by Morrisset and Rivodoro (1995) that while university education has a positive effect only in industrialised countries, primary and secondary levels of education positively influence savings in all regions. This educational effect, however, is only evident for older individuals other than household heads.

This analysis proceeded with an application of the second model with the country-of-origin variables other than institutional factors to the immigrant households. Table 3.4 (Panel A) and Table 3.4 (Panel B) present the results of the regressions using samples with and without

household heads aged 15–35, respectively. According to these outcomes, out of ten country-of-origin characteristics, only GDP per capita, English-language-speaking ability and religion influence the saving patterns of household heads. First, a higher average per capita GDP in a country is associated with the higher household savings of its emigrants in Australia. Second, the ability to speak English has a significant positive effect on the saving behaviour of immigrant households. Third, according to Table 3.4 (Panel A), among other religions followed by the home countries of Australian immigrants aged 15 or older, only household heads from Muslim countries have different saving rates from household heads from Christian countries. In particular, the saving rates of household heads from countries following Islam are lower than the rates of those from the base group. Between older household heads, however, as Table 3.4 (Panel B) shows, immigrants from countries with a dominant Buddhist religion also have significantly lower saving rates than the base case.

Surprisingly, all the home-country variables, except the general age dependency ratio and the young age dependency ratio, have significant effects on the saving behaviour of individuals, unlike when the dataset was limited to households. There are similar outcomes for immigrants aged 15 and over (Table 3.4 [Panel C]) and those aged 36 and over, hence only estimates from the larger sample are presented[21]. There is a negative correlation between immigrant household savings at an individual level and the national saving rate as well as the share of received remittances in a country's GDP. In contrast, a higher percentage of old dependent people, a higher country's GDP per capita and a higher market capitalisation at the immigrant's country of origin result in a higher domestic saving rate when they migrate to Australia. In addition, similar to the findings obtained in the analysis of the saving rate at the household level, an individual's ability to speak English is associated with a higher level of their savings in Australia. In line with the household level outcomes again, immigrants from countries with a dominant Muslim religion have lower household saving rates than immigrants from countries with a Christian following. Immigrants from non-religious countries aged 36 or over also tend to save less than their counterparts from countries where Christianity is dominant. The saving behaviour of immigrants from other dominant religions does not differ from the base case.

[21] Results for the 36+ sample are in Table B.4 in Appendix B.

## Table 3.3 Effects of institutional variables on the saving behaviour of immigrants

### Panel A) aged 15 years or older, household level

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Household | 0.254*** | 0.252*** | 0.252*** | 0.252*** | 0.253*** | 0.252*** | 0.249*** | 0.256*** | 0.189*** | 0.264*** |
| income | (0.0668) | (0.0665) | (0.0673) | (0.0673) | (0.0676) | (0.0673) | (0.0671) | (0.0670) | (0.0633) | (0.0676) |
| Wealth | -0.000365* | -0.000379** | -0.000377** | -0.000377** | -0.000378** | -0.000372** | -0.000353* | -0.000375** | -0.000213 | -0.000363* |
| | (0.000190) | (0.000187) | (0.000188) | (0.000188) | (0.000188) | (0.000189) | (0.000191) | (0.000188) | (0.000216) | (0.000191) |
| Dependency ratio | -0.106 | -0.116 | -0.114 | -0.114 | -0.114 | -0.113 | -0.123 | -0.112 | -0.106 | -0.0447 |
| | (0.0878) | (0.0881) | (0.0879) | (0.0879) | (0.0880) | (0.0879) | (0.0890) | (0.0887) | (0.114) | (0.0902) |
| Age | -0.00439 | -0.00430 | -0.00432 | -0.00432 | -0.00435 | -0.00428 | -0.00323 | -0.00393 | 0.000198 | -0.00466 |
| | (0.00449) | (0.00449) | (0.00449) | (0.00449) | (0.00449) | (0.00449) | (0.00454) | (0.00451) | (0.00552) | (0.00455) |
| Age squared | 0.0000912** | 0.0000901** | 0.0000903** | 0.0000903** | 0.0000904** | 0.0000898** | 0.0000812* | 0.0000869* | 0.0000482 | 0.0000972** |
| | (0.0000442) | (0.0000443) | (0.0000443) | (0.0000443) | (0.0000443) | (0.0000443) | (0.0000450) | (0.0000445) | (0.0000511) | (0.0000448) |
| Gender (1 if male) | 0.0438* | 0.0462* | 0.0461* | 0.0461* | 0.0455* | 0.0457* | 0.0423* | 0.0447* | 0.0829*** | 0.0444* |
| | (0.0242) | (0.0244) | (0.0244) | (0.0244) | (0.0244) | (0.0244) | (0.0244) | (0.0245) | (0.0293) | (0.0244) |
| No. of children | 0.00114 | 0.00177 | 0.00233 | 0.00233 | 0.00170 | 0.00274 | 0.00356 | 0.00307 | 0.0243 | -0.0113 |
| | (0.0266) | (0.0264) | (0.0265) | (0.0265) | (0.0266) | (0.0264) | (0.0269) | (0.0271) | (0.0325) | (0.0272) |
| No. of persons | 0.00838 | 0.0101 | 0.00981 | 0.00981 | 0.00986 | 0.00896 | 0.00738 | 0.00612 | 0.00918 | 0.00404 |
| | (0.0200) | (0.0200) | (0.0203) | (0.0203) | (0.0205) | (0.0201) | (0.0200) | (0.0202) | (0.0229) | (0.0199) |
| **Marital status (Married = base case)** | | | | | | | | | | |
| Previously | 0.0433 | 0.0461 | 0.0457 | 0.0457 | 0.0461 | 0.0446 | 0.0433 | 0.0426 | 0.000183 | 0.0366 |
| married | (0.0317) | (0.0314) | (0.0314) | (0.0314) | (0.0314) | (0.0315) | (0.0317) | (0.0318) | (0.0367) | (0.0319) |
| Never been | 0.0258 | 0.0249 | 0.0265 | 0.0265 | 0.0265 | 0.0247 | 0.0158 | 0.0208 | -0.0191 | 0.0265 |
| married | (0.0425) | (0.0425) | (0.0425) | (0.0425) | (0.0425) | (0.0427) | (0.0431) | (0.0427) | (0.0522) | (0.0427) |
| **Level of highest education (No post-school education = base case)** | | | | | | | | | | |
| Bachelor degree | -0.00970 | -0.00950 | -0.00992 | -0.00992 | -0.00959 | -0.00899 | -0.0104 | -0.00860 | -0.0278 | -0.0145 |
| or higher | (0.0243) | (0.0243) | (0.0243) | (0.0243) | (0.0243) | (0.0243) | (0.0245) | (0.0246) | (0.0296) | (0.0243) |
| Other post-school | 0.0323 | 0.0357 | 0.0315 | 0.0315 | 0.0322 | 0.0321 | 0.0286 | 0.0332 | 0.0363 | 0.00928 |
| qualification | (0.0342) | (0.0343) | (0.0341) | (0.0341) | (0.0344) | (0.0342) | (0.0332) | (0.0342) | (0.0396) | (0.0341) |
| **Occupation (Managers and administrators = base case)** | | | | | | | | | | |
| Professionals | 0.0372 | 0.0326 | 0.0367 | 0.0367 | 0.0357 | 0.0377 | 0.0384 | 0.0392 | 0.0718 | 0.0463 |
| | (0.0373) | (0.0369) | (0.0373) | (0.0373) | (0.0372) | (0.0374) | (0.0375) | (0.0378) | (0.0452) | (0.0376) |
| Associate professionals | 0.0224 | 0.0232 | 0.0235 | 0.0235 | 0.0228 | 0.0251 | 0.0231 | 0.0229 | 0.0587 | 0.0115 |
| | (0.0431) | (0.0431) | (0.0433) | (0.0433) | (0.0432) | (0.0434) | (0.0431) | (0.0432) | (0.0512) | (0.0434) |
| Tradespersons | -0.0308 | -0.0348 | -0.0317 | -0.0317 | -0.0313 | -0.0312 | -0.0262 | -0.0301 | 0.0467 | -0.0393 |
| | (0.0448) | (0.0445) | (0.0447) | (0.0447) | (0.0448) | (0.0448) | (0.0450) | (0.0448) | (0.0563) | (0.0449) |
| Advanced clerical workers | -0.0764 | -0.0721 | -0.0749 | -0.0749 | -0.0744 | -0.0752 | -0.0727 | -0.0681 | -0.0657 | -0.0784 |
| | (0.0727) | (0.0728) | (0.0727) | (0.0727) | (0.0727) | (0.0727) | (0.0729) | (0.0733) | (0.0877) | (0.0721) |
| Intermediate clerical workers | 0.0812** | 0.0835** | 0.0810** | 0.0810** | 0.0812** | 0.0813** | 0.0747* | 0.0771* | 0.135*** | 0.0857** |
| | (0.0412) | (0.0413) | (0.0412) | (0.0412) | (0.0412) | (0.0412) | (0.0417) | (0.0419) | (0.0506) | (0.0418) |
| Production workers | 0.0534 | 0.0547 | 0.0567 | 0.0567 | 0.0565 | 0.0575 | 0.0610 | 0.0583 | 0.0631 | 0.0440 |
| | (0.0498) | (0.0498) | (0.0496) | (0.0496) | (0.0496) | (0.0496) | (0.0500) | (0.0502) | (0.0620) | (0.0520) |
| Elementary clerical workers | -0.0154 | -0.0177 | -0.0165 | -0.0165 | -0.0164 | -0.0149 | -0.0268 | -0.0198 | 0.0821 | -0.0251 |
| | (0.0673) | (0.0672) | (0.0673) | (0.0673) | (0.0673) | (0.0674) | (0.0689) | (0.0688) | (0.0910) | (0.0669) |
| Labourers | 0.0825 | 0.0845 | 0.0855 | 0.0855 | 0.0852 | 0.0855 | 0.0986* | 0.0980* | 0.167** | 0.0782 |
| | (0.0523) | (0.0523) | (0.0524) | (0.0524) | (0.0524) | (0.0524) | (0.0532) | (0.0533) | (0.0700) | (0.0520) |

(continued on next page)

## Panel A) continued

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Qualities of country-of-origin institutions:** | | | | | | | | | | |
| Voice & Accountability | 0.0953* | | | | | | | | | |
| | (0.0522) | | | | | | | | | |
| Political Stability | | 0.121** | | | | | | | | |
| | | (0.0505) | | | | | | | | |
| Government | | | 0.111* | | | | | | | |
| Effectiveness | | | (0.0565) | | | | | | | |
| Control of Corruption | | | | 0.111* | | | | | | |
| | | | | (0.0565) | | | | | | |
| Rule of Law | | | | | 0.101* | | | | | |
| | | | | | (0.0543) | | | | | |
| Regulatory Quality | | | | | | 0.100* | | | | |
| | | | | | | (0.0538) | | | | |
| British Legal | | | | | | | 0.0398* | | | |
| | | | | | | | (0.0224) | | | |
| Latitude | | | | | | | | 0.0933 | | |
| | | | | | | | | (0.0669) | | |
| School Enrolment | | | | | | | | | 0.000988 | |
| | | | | | | | | | (0.00107) | |
| Constraint on Executive | | | | | | | | | | 0.00997 |
| | | | | | | | | | | (0.00881) |
| Constant | -2.765*** | -2.773*** | -2.783*** | -2.783*** | -2.770*** | -2.758*** | -2.625*** | -2.688*** | -2.167*** | -2.777*** |
| | (0.650) | (0.647) | (0.647) | (0.647) | (0.651) | (0.652) | (0.675) | (0.672) | (0.630) | (0.673) |
| Observations | 995 | 995 | 996 | 996 | 996 | 996 | 987 | 986 | 657 | 966 |
| Root MSE | 0.298 | 0.298 | 0.298 | 0.298 | 0.298 | 0.298 | 0.298 | 0.298 | 0.295 | 0.295 |
| R-squared | 0.305 | 0.306 | 0.305 | 0.305 | 0.305 | 0.304 | 0.303 | 0.304 | 0.300 | 0.310 |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR and location of household controls, which are not reported due to low significance. The sample is limited to immigrant household heads aged 15 or older who have non-missing data on country of origin with the household saving rates above -1.28 and below 0.79. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

## Panel B) aged 36 years or older, household level

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Household | 0.219*** | 0.219*** | 0.218*** | 0.218*** | 0.217*** | 0.219*** | 0.206*** | 0.210*** | 0.193*** | 0.230*** |
| income | (0.0643) | (0.0641) | (0.0646) | (0.0646) | (0.0649) | (0.0645) | (0.0658) | (0.0656) | (0.0730) | (0.0644) |
| Wealth | -0.000249 | -0.000262 | -0.000257 | -0.000257 | -0.000260 | -0.000255 | -0.000220 | -0.000239 | -0.000168 | -0.000250 |
| | (0.000190) | (0.000188) | (0.000189) | (0.000189) | (0.000189) | (0.000189) | (0.000193) | (0.000191) | (0.000236) | (0.000191) |
| Dependency ratio | -0.110 | -0.121 | -0.115 | -0.115 | -0.116 | -0.114 | -0.132 | -0.116 | -0.0939 | -0.0595 |
| | (0.0976) | (0.0980) | (0.0978) | (0.0978) | (0.0979) | (0.0978) | (0.0996) | (0.0988) | (0.123) | (0.0999) |
| Age | -0.00754 | -0.00758 | -0.00746 | -0.00746 | -0.00747 | -0.00753 | -0.00663 | -0.00789 | -0.00213 | -0.00671 |
| | (0.00848) | (0.00847) | (0.00847) | (0.00847) | (0.00848) | (0.00849) | (0.00850) | (0.00855) | (0.0105) | (0.00851) |
| Age squared | 0.000112 | 0.000112 | 0.000111 | 0.000111 | 0.000110 | 0.000111 | 0.000103 | 0.000112 | 6.64e-05 | 0.000110 |
| | (0.0000689) | (0.0000689) | (0.0000689) | (0.0000689) | (0.0000689) | (0.0000689) | (0.0000695) | (0.0000694) | (0.0000846) | (0.0000693) |
| Gender (1 if male) | 0.0580** | 0.0594** | 0.0606** | 0.0606** | 0.0602** | 0.0601** | 0.0579** | 0.0595** | 0.0972*** | 0.0572** |
| | (0.0270) | (0.0271) | (0.0272) | (0.0272) | (0.0272) | (0.0272) | (0.0275) | (0.0276) | (0.0325) | (0.0274) |
| No. of children | 0.00368 | 0.00394 | 0.00380 | 0.00380 | 0.00280 | 0.00409 | 0.00596 | 0.00368 | 0.0316 | -0.00494 |
| | (0.0302) | (0.0301) | (0.0302) | (0.0302) | (0.0303) | (0.0302) | (0.0309) | (0.0311) | (0.0363) | (0.0309) |
| No. of persons | 0.000771 | 0.00331 | 0.00212 | 0.00212 | 0.00271 | 0.000952 | 0.000567 | 0.000898 | -0.00433 | -0.00238 |
| | (0.0212) | (0.0215) | (0.0214) | (0.0214) | (0.0216) | (0.0212) | (0.0214) | (0.0216) | (0.0269) | (0.0213) |
| **Marital status (Married = base case)** | | | | | | | | | | |
| Previously | 0.0361 | 0.0413 | 0.0391 | 0.0391 | 0.0395 | 0.0384 | 0.0344 | 0.0337 | 0.0123 | 0.0300 |
| married | (0.0339) | (0.0335) | (0.0337) | (0.0337) | (0.0336) | (0.0337) | (0.0341) | (0.0341) | (0.0401) | (0.0340) |
| Never been | 0.0420 | 0.0442 | 0.0420 | 0.0420 | 0.0422 | 0.0408 | 0.0310 | 0.0386 | 0.0304 | 0.0358 |
| married | (0.0517) | (0.0515) | (0.0517) | (0.0517) | (0.0517) | (0.0518) | (0.0526) | (0.0521) | (0.0645) | (0.0518) |
| **Level of highest education (No post-school education = base case)** | | | | | | | | | | |
| Bachelor degree | -0.00740 | -0.00617 | -0.00735 | -0.00735 | -0.00706 | -0.00695 | -0.00632 | -0.00422 | -0.0234 | -0.00943 |
| or higher | (0.0260) | (0.0261) | (0.0260) | (0.0260) | (0.0261) | (0.0261) | (0.0263) | (0.0264) | (0.0320) | (0.0262) |
| Other post-school | 0.0320 | 0.0370 | 0.0321 | 0.0321 | 0.0335 | 0.0317 | 0.0302 | 0.0374 | 0.0324 | 0.0145 |
| qualification | (0.0364) | (0.0369) | (0.0364) | (0.0364) | (0.0367) | (0.0364) | (0.0359) | (0.0367) | (0.0449) | (0.0365) |
| **Occupation (Managers and administrators = base case)** | | | | | | | | | | |
| Professionals | 0.0557 | 0.0497 | 0.0544 | 0.0544 | 0.0535 | 0.0554 | 0.0596 | 0.0601 | 0.0710 | 0.0643 |
| | (0.0406) | (0.0402) | (0.0405) | (0.0405) | (0.0404) | (0.0406) | (0.0412) | (0.0413) | (0.0500) | (0.0410) |
| Associate professionals | 0.0613 | 0.0607 | 0.0609 | 0.0609 | 0.0602 | 0.0628 | 0.0633 | 0.0637 | 0.0798 | 0.0493 |
| | (0.0481) | (0.0480) | (0.0481) | (0.0481) | (0.0480) | (0.0483) | (0.0484) | (0.0485) | (0.0575) | (0.0488) |
| Tradespersons | -0.0176 | -0.0238 | -0.0201 | -0.0201 | -0.0190 | -0.0197 | -0.0114 | -0.0161 | 0.0352 | -0.0244 |
| | (0.0512) | (0.0506) | (0.0510) | (0.0510) | (0.0511) | (0.0510) | (0.0517) | (0.0513) | (0.0646) | (0.0511) |
| Advanced clerical workers | -0.0806 | -0.0737 | -0.0761 | -0.0761 | -0.0766 | -0.0780 | -0.0765 | -0.0705 | -0.0391 | -0.0826 |
| | (0.0833) | (0.0835) | (0.0835) | (0.0835) | (0.0835) | (0.0834) | (0.0839) | (0.0841) | (0.0966) | (0.0829) |
| Intermediate clerical workers | 0.0883* | 0.0888* | 0.0879* | 0.0879* | 0.0878* | 0.0878* | 0.0863* | 0.0888* | 0.130** | 0.0909* |
| | (0.0470) | (0.0470) | (0.0470) | (0.0470) | (0.0470) | (0.0470) | (0.0475) | (0.0477) | (0.0564) | (0.0481) |
| Production workers | 0.0878 | 0.0861 | 0.0866 | 0.0866 | 0.0863 | 0.0877 | 0.0956* | 0.0948* | 0.0543 | 0.0670 |
| | (0.0566) | (0.0566) | (0.0566) | (0.0566) | (0.0566) | (0.0567) | (0.0575) | (0.0574) | (0.0673) | (0.0581) |
| Elementary clerical workers | 0.103 | 0.0939 | 0.101 | 0.101 | 0.101 | 0.103 | 0.0989 | 0.101 | 0.211** | 0.0918 |
| | (0.0779) | (0.0774) | (0.0778) | (0.0778) | (0.0778) | (0.0780) | (0.0799) | (0.0799) | (0.107) | (0.0775) |
| Labourers | 0.0903 | 0.0947 | 0.0948 | 0.0948 | 0.0945 | 0.0946 | 0.112* | 0.111* | 0.173** | 0.0857 |
| | (0.0582) | (0.0583) | (0.0583) | (0.0583) | (0.0584) | (0.0584) | (0.0597) | (0.0597) | (0.0770) | (0.0580) |

(continued on next page)

## Panel B) continued

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Qualities of country-of-origin institutions:** | | | | | | | | | | |
| Voice & Accountability | 0.108* | | | | | | | | | |
| | (0.0586) | | | | | | | | | |
| Political Stability | | 0.123** | | | | | | | | |
| | | (0.0589) | | | | | | | | |
| Government | | | 0.122* | | | | | | | |
| Effectiveness | | | (0.0628) | | | | | | | |
| Control of Corruption | | | | 0.122* | | | | | | |
| | | | | (0.0628) | | | | | | |
| Rule of Law | | | | | 0.116* | | | | | |
| | | | | | (0.0607) | | | | | |
| Regulatory Quality | | | | | | 0.104* | | | | |
| | | | | | | (0.0606) | | | | |
| British Legal | | | | | | | 0.0454* | | | |
| | | | | | | | (0.0246) | | | |
| Latitude | | | | | | | | 0.129* | | |
| | | | | | | | | (0.0735) | | |
| School Enrolment | | | | | | | | | 0.00133 | |
| | | | | | | | | | (0.00122) | |
| Constraint on Executive | | | | | | | | | | 0.0107 |
| | | | | | | | | | | (0.0102) |
| Constant | -2.301*** | -2.313*** | -2.314*** | -2.314*** | -2.299*** | -2.293*** | -2.044*** | -2.081*** | -2.153*** | -2.349*** |
| | (0.728) | (0.728) | (0.727) | (0.727) | (0.729) | (0.730) | (0.764) | (0.762) | (0.829) | (0.741) |
| Observations | 857 | 857 | 857 | 857 | 857 | 857 | 849 | 849 | 578 | 834 |
| Root MSE | 0.303 | 0.303 | 0.303 | 0.303 | 0.303 | 0.303 | 0.304 | 0.304 | 0.298 | 0.301 |
| R-squared | 0.280 | 0.280 | 0.279 | 0.279 | 0.279 | 0.279 | 0.272 | 0.274 | 0.296 | 0.288 |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR and location of household controls, which are not reported due to low significance. The sample is limited to immigrant household heads aged 36 or older who have non-missing data on country of origin with the household saving rates above -1.28 and below 0.79. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

## Panel C) aged 15 years or older, individual level

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Income | 0.0437*** | 0.0437*** | 0.0423*** | 0.0434*** | 0.0440*** | 0.0434*** | 0.0430*** | 0.0441*** | 0.0295** | 0.0502*** |
| | (0.0104) | (0.0104) | (0.0103) | (0.0104) | (0.0104) | (0.0104) | (0.0107) | (0.0108) | (0.0130) | (0.0112) |
| Wealth | -0.0000240 | -0.0000298 | -0.0000333 | -0.0000324 | -0.0000314 | -0.0000284 | -0.0000179 | -0.0000215 | 0.0000742 | -0.0000140 |
| | (0.0000927) | (0.0000927) | (0.0000921) | (0.0000927) | (0.0000927) | (0.0000928) | (0.0000921) | (0.0000932) | (0.000114) | (0.0000930) |
| Age | -0.00331 | -0.00359 | -0.00451 | -0.00337 | -0.00346 | -0.00345 | -0.00368 | -0.00300 | -0.00498 | -0.00301 |
| | (0.00341) | (0.00341) | (0.00339) | (0.00340) | (0.00340) | (0.00341) | (0.00342) | (0.00345) | (0.00417) | (0.00344) |
| Age squared | 0.0000472 | 0.0000504 | 0.0000579* | 0.0000472 | 0.0000478 | 0.0000481 | 0.0000534 | 0.0000454 | 0.0000657* | 0.0000476 |
| | (0.0000325) | (0.0000325) | (0.0000323) | (0.0000325) | (0.0000325) | (0.0000325) | (0.0000327) | (0.0000329) | (0.0000390) | (0.0000328) |
| Gender (1 if male) | 0.0110 | 0.0118 | 0.00814 | 0.0126 | 0.0116 | 0.0121 | 0.00688 | 0.0131 | 0.0323 | 0.0108 |
| | (0.0175) | (0.0175) | (0.0174) | (0.0175) | (0.0175) | (0.0175) | (0.0176) | (0.0178) | (0.0212) | (0.0178) |
| No. of children | -0.0429*** | -0.0436*** | -0.0422*** | -0.0433*** | -0.0441*** | -0.0427*** | -0.0444*** | -0.0433*** | -0.0135 | -0.0465*** |
| | (0.0139) | (0.0139) | (0.0138) | (0.0139) | (0.0139) | (0.0139) | (0.0140) | (0.0141) | (0.0167) | (0.0142) |
| No. of persons | 0.0253*** | 0.0272*** | 0.0258*** | 0.0270*** | 0.0273*** | 0.0260*** | 0.0256*** | 0.0246*** | 0.0134 | 0.0250*** |
| | (0.00913) | (0.00915) | (0.00909) | (0.00914) | (0.00915) | (0.00914) | (0.00925) | (0.00932) | (0.0110) | (0.00924) |
| Head | -0.261*** | -0.257*** | -0.258*** | -0.262*** | -0.263*** | -0.262*** | -0.258*** | -0.258*** | -0.261*** | -0.258*** |
| | (0.0380) | (0.0379) | (0.0378) | (0.0379) | (0.0379) | (0.0380) | (0.0387) | (0.0389) | (0.0472) | (0.0383) |
| Spouse | -0.194*** | -0.190*** | -0.195*** | -0.195*** | -0.196*** | -0.194*** | -0.193*** | -0.187*** | -0.216*** | -0.190*** |
| | (0.0387) | (0.0386) | (0.0386) | (0.0387) | (0.0387) | (0.0387) | (0.0393) | (0.0395) | (0.0473) | (0.0390) |
| **Marital status (Married = base case)** | | | | | | | | | | |
| Previously | -0.0815*** | -0.0777*** | -0.0824*** | -0.0791*** | -0.0786*** | -0.0794*** | -0.0824*** | -0.0820*** | -0.111*** | -0.0846*** |
| married | (0.0267) | (0.0266) | (0.0264) | (0.0266) | (0.0266) | (0.0267) | (0.0267) | (0.0270) | (0.0316) | (0.0269) |
| Never been | -0.0944*** | -0.0926*** | -0.0980*** | -0.0935*** | -0.0936*** | -0.0944*** | -0.0999*** | -0.0925*** | -0.129*** | -0.0914** |
| married | (0.0351) | (0.0350) | (0.0351) | (0.0350) | (0.0350) | (0.0351) | (0.0353) | (0.0354) | (0.0448) | (0.0358) |
| **Level of highest education (No post-school education = base case)** | | | | | | | | | | |
| Bachelor degree | -0.00954 | -0.0102 | -0.0120 | -0.0113 | -0.0107 | -0.0104 | -0.00890 | -0.00830 | -0.0159 | -0.00932 |
| or higher | (0.0192) | (0.0192) | (0.0191) | (0.0192) | (0.0192) | (0.0192) | (0.0192) | (0.0194) | (0.0232) | (0.0194) |
| Other post-school | 0.0444** | 0.0456** | 0.0464** | 0.0424** | 0.0433** | 0.0423** | 0.0419** | 0.0415* | 0.0446* | 0.0366* |
| qualification | (0.0210) | (0.0210) | (0.0208) | (0.0209) | (0.0210) | (0.0210) | (0.0209) | (0.0212) | (0.0254) | (0.0214) |
| **Employment status ( Employed = base case)** | | | | | | | | | | |
| Unemployed | -0.0473 | -0.0485 | -0.0480 | -0.0470 | -0.0479 | -0.0491 | -0.0458 | -0.0513 | -0.149** | -0.0464 |
| | (0.0573) | (0.0572) | (0.0568) | (0.0572) | (0.0572) | (0.0573) | (0.0578) | (0.0584) | (0.0692) | (0.0584) |
| Not in labour force | -0.0864*** | -0.0861*** | -0.0896*** | -0.0852*** | -0.0846*** | -0.0868*** | -0.0895*** | -0.0904*** | -0.128*** | -0.0862*** |
| | (0.0245) | (0.0245) | (0.0245) | (0.0245) | (0.0245) | (0.0245) | (0.0248) | (0.0249) | (0.0294) | (0.0249) |

(continued on next page)

## Panel C) continued

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Qualities of country-of-origin institutions:** | | | | | | | | | | |
| Voice & Accountability | 0.112*** | | | | | | | | | |
| | (0.0367) | | | | | | | | | |
| Political Stability | | 0.139*** | | | | | | | | |
| | | (0.0371) | | | | | | | | |
| Government | | | 0.147*** | | | | | | | |
| Effectiveness | | | (0.0393) | | | | | | | |
| Control of Corruption | | | | 0.146*** | | | | | | |
| | | | | (0.0396) | | | | | | |
| Rule of Law | | | | | 0.135*** | | | | | |
| | | | | | (0.0371) | | | | | |
| Regulatory Quality | | | | | | 0.122*** | | | | |
| | | | | | | (0.0378) | | | | |
| British Legal | | | | | | | 0.0668*** | | | |
| | | | | | | | (0.0167) | | | |
| Latitude | | | | | | | | 0.0784* | | |
| | | | | | | | | (0.0476) | | |
| School Enrolment | | | | | | | | | 0.00112 | |
| | | | | | | | | | (0.000738) | |
| Constraint on Executive | | | | | | | | | | 0.0108* |
| | | | | | | | | | | (0.00653) |
| Constant | -0.117 | -0.151 | -0.139 | -0.177 | -0.158 | -0.134 | 0.0103 | -0.00386 | 0.180 | -0.0968 |
| | (0.131) | (0.132) | (0.134) | (0.134) | (0.133) | (0.133) | (0.125) | (0.125) | (0.162) | (0.133) |
| Observations | 1809 | 1809 | 1803 | 1810 | 1810 | 1810 | 1776 | 1782 | 1186 | 1756 |
| Root MSE | 0.329 | 0.328 | 0.326 | 0.328 | 0.328 | 0.329 | 0.326 | 0.330 | 0.321 | 0.328 |
| R-squared | 0.124 | 0.127 | 0.127 | 0.126 | 0.126 | 0.125 | 0.128 | 0.121 | 0.137 | 0.127 |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. The sample is limited to immigrant respondents aged 15 or older who have non-missing data on country of origin with the household saving rates above -1.28 and below 0.79. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

**Panel D) aged 36 or older, individual level**

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Income | 0.0558*** | 0.0556*** | 0.0538*** | 0.0544*** | 0.0547*** | 0.0550*** | 0.0571*** | 0.0577*** | 0.0687*** | 0.0583*** |
| | (0.0159) | (0.0159) | (0.0160) | (0.0159) | (0.0159) | (0.0159) | (0.0171) | (0.0173) | (0.0222) | (0.0160) |
| Wealth | -0.00000370 | -0.00000794 | -0.0000124 | -0.00000665 | -0.00000857 | -0.00000616 | 0.000000757 | -0.00000155 | 0.0000325 | 0.0000101 |
| | (0.0000970) | (0.0000971) | (0.0000969) | (0.0000970) | (0.0000970) | (0.0000971) | (0.0000977) | (0.0000979) | (0.000123) | (0.0000976) |
| Age | -0.00476 | -0.00459 | -0.00449 | -0.00491 | -0.00491 | -0.00508 | -0.00288 | -0.00475 | -0.00432 | -0.00412 |
| | (0.00696) | (0.00696) | (0.00695) | (0.00696) | (0.00696) | (0.00697) | (0.00700) | (0.00704) | (0.00852) | (0.00705) |
| Age squared | 0.0000627 | 0.0000629 | 0.0000611 | 0.0000640 | 0.0000637 | 0.0000652 | 0.0000499 | 0.0000624 | 0.0000635 | 0.0000595 |
| | (0.0000581) | (0.0000581) | (0.0000581) | (0.0000581) | (0.0000581) | (0.0000582) | (0.0000585) | (0.0000588) | (0.0000702) | (0.0000589) |
| Gender (1 if male) | 0.00975 | 0.0104 | 0.00867 | 0.0114 | 0.0107 | 0.0109 | 0.00823 | 0.0112 | 0.0222 | 0.00864 |
| | (0.0196) | (0.0196) | (0.0196) | (0.0196) | (0.0196) | (0.0196) | (0.0198) | (0.0198) | (0.0238) | (0.0198) |
| No. of children | -0.0480*** | -0.0498*** | -0.0484*** | -0.0502*** | -0.0511*** | -0.0499*** | -0.0463*** | -0.0488*** | -0.0229 | -0.0484*** |
| | (0.0172) | (0.0172) | (0.0172) | (0.0172) | (0.0172) | (0.0172) | (0.0175) | (0.0175) | (0.0217) | (0.0175) |
| No. of persons | 0.0255** | 0.0290** | 0.0276** | 0.0281** | 0.0287** | 0.0271** | 0.0236** | 0.0243** | 0.0181 | 0.0244** |
| | (0.0116) | (0.0117) | (0.0117) | (0.0117) | (0.0117) | (0.0116) | (0.0118) | (0.0119) | (0.0153) | (0.0118) |
| Head | -0.254*** | -0.242*** | -0.251*** | -0.253*** | -0.254*** | -0.253*** | -0.254*** | -0.250*** | -0.268*** | -0.251*** |
| | (0.0437) | (0.0437) | (0.0438) | (0.0436) | (0.0436) | (0.0437) | (0.0449) | (0.0447) | (0.0561) | (0.0440) |
| Spouse | -0.186*** | -0.174*** | -0.185*** | -0.185*** | -0.186*** | -0.184*** | -0.183*** | -0.177*** | -0.194*** | -0.185*** |
| | (0.0435) | (0.0434) | (0.0436) | (0.0435) | (0.0435) | (0.0435) | (0.0444) | (0.0442) | (0.0536) | (0.0438) |
| **Marital status (Married = base case)** | | | | | | | | | | |
| Previously | -0.0795*** | -0.0733*** | -0.0779*** | -0.0756*** | -0.0750*** | -0.0762*** | -0.0789*** | -0.0784*** | -0.0953*** | -0.0843*** |
| married | (0.0284) | (0.0284) | (0.0284) | (0.0284) | (0.0284) | (0.0284) | (0.0286) | (0.0287) | (0.0346) | (0.0288) |
| Never been | -0.0406 | -0.0347 | -0.0567 | -0.0379 | -0.0375 | -0.0395 | -0.0605 | -0.0365 | -0.0598 | -0.0414 |
| married | (0.0462) | (0.0462) | (0.0468) | (0.0462) | (0.0462) | (0.0462) | (0.0470) | (0.0465) | (0.0602) | (0.0473) |
| **Level of highest education (No post-school education = base case)** | | | | | | | | | | |
| Bachelor degree | -0.00825 | -0.00723 | -0.00970 | -0.00856 | -0.00795 | -0.00806 | -0.00672 | -0.00666 | -0.0144 | -0.00586 |
| or higher | (0.0206) | (0.0205) | (0.0205) | (0.0205) | (0.0205) | (0.0206) | (0.0207) | (0.0208) | (0.0250) | (0.0209) |
| Other post-school | 0.0345 | 0.0378 | 0.0352 | 0.0327 | 0.0343 | 0.0334 | 0.0281 | 0.0316 | 0.0341 | 0.0317 |
| qualification | (0.0234) | (0.0235) | (0.0233) | (0.0233) | (0.0234) | (0.0234) | (0.0234) | (0.0236) | (0.0287) | (0.0238) |
| **Employment status ( Employed = base case)** | | | | | | | | | | |
| Unemployed | -0.0529 | -0.0532 | -0.0466 | -0.0490 | -0.0492 | -0.0494 | -0.0538 | -0.0598 | -0.0928 | -0.0636 |
| | (0.0682) | (0.0681) | (0.0681) | (0.0682) | (0.0681) | (0.0682) | (0.0699) | (0.0701) | (0.0815) | (0.0696) |
| Not in labour force | -0.103*** | -0.103*** | -0.106*** | -0.104*** | -0.103*** | -0.105*** | -0.103*** | -0.106*** | -0.120*** | -0.100*** |
| | (0.0272) | (0.0272) | (0.0273) | (0.0272) | (0.0272) | (0.0272) | (0.0280) | (0.0281) | (0.0343) | (0.0276) |

(continued on next page)

## Panel D) continued

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Qualities of country-of-origin institutions:** | | | | | | | | | | |
| Voice & Accountability | 0.146*** | | | | | | | | | |
| | (0.0425) | | | | | | | | | |
| Political Stability | | 0.162*** | | | | | | | | |
| | | (0.0456) | | | | | | | | |
| Government | | | 0.171*** | | | | | | | |
| Effectiveness | | | (0.0466) | | | | | | | |
| Control of Corruption | | | | 0.168*** | | | | | | |
| | | | | (0.0466) | | | | | | |
| Rule of Law | | | | | 0.161*** | | | | | |
| | | | | | (0.0440) | | | | | |
| Regulatory Quality | | | | | | 0.155*** | | | | |
| | | | | | | (0.0451) | | | | |
| British Legal | | | | | | | 0.0624*** | | | |
| | | | | | | | (0.0185) | | | |
| Latitude | | | | | | | | 0.120** | | |
| | | | | | | | | (0.0541) | | |
| School Enrolment | | | | | | | | | 0.00161* | |
| | | | | | | | | | (0.000860) | |
| Constraint on Executive | | | | | | | | | | 0.0181** |
| | | | | | | | | | | (0.00763) |
| Constant | -0.261 | -0.303 | -0.309 | -0.296 | -0.284 | -0.272 | -0.155 | -0.115 | -0.307 | -0.209 |
| | (0.274) | (0.275) | (0.275) | (0.275) | (0.274) | (0.275) | (0.282) | (0.283) | (0.351) | (0.276) |
| Observations | 1504 | 1504 | 1499 | 1504 | 1504 | 1504 | 1478 | 1483 | 1007 | 1468 |
| Root MSE | 0.327 | 0.327 | 0.326 | 0.327 | 0.327 | 0.327 | 0.327 | 0.328 | 0.324 | 0.328 |
| R-squared | 0.136 | 0.137 | 0.137 | 0.136 | 0.137 | 0.136 | 0.136 | 0.132 | 0.154 | 0.134 |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. The sample is limited to immigrant respondents aged 36 or older who have non-missing data on country of origin with the household saving rates above -1.28 and below 0.79. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

## Table 3.4 Effects of additional country variables on the saving behaviour of immigrants

### Panel A) aged 15 or older, household level

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Household | 0.254*** | 0.254*** | 0.272*** | 0.269*** | 0.264*** | 0.254*** | 0.248*** | 0.265*** | 0.266*** | 0.252*** |
| income | (0.0688) | (0.0686) | (0.0640) | (0.0650) | (0.0658) | (0.0679) | (0.0689) | (0.0685) | (0.0682) | (0.0649) |
| Wealth | -0.000367* | -0.000370* | -0.000399** | -0.000397** | -0.000393** | -0.000381** | -0.000370* | -0.000400** | -0.000401** | -0.000336* |
| | (0.000191) | (0.000191) | (0.000185) | (0.000186) | (0.000187) | (0.000188) | (0.000190) | (0.000188) | (0.000188) | (0.000173) |
| Dependency ratio | -0.0772 | -0.0891 | -0.104 | -0.105 | -0.105 | -0.0827 | -0.117 | -0.0775 | -0.0858 | -0.114 |
| | (0.0903) | (0.0894) | (0.0876) | (0.0877) | (0.0877) | (0.0896) | (0.0882) | (0.0897) | (0.0901) | (0.0879) |
| Age | -0.00332 | -0.00289 | -0.00330 | -0.00366 | -0.00395 | -0.00423 | -0.00373 | -0.00300 | -0.00373 | -0.00416 |
| | (0.00455) | (0.00453) | (0.00450) | (0.00450) | (0.00450) | (0.00451) | (0.00451) | (0.00455) | (0.00452) | (0.00450) |
| Age squared | 0.0000830* | 0.0000794* | 0.0000867* | 0.0000885** | 0.0000897** | 0.0000897** | 0.0000857* | 0.0000801* | 0.0000887** | 0.0000895** |
| | (0.0000450) | (0.0000448) | (0.0000443) | (0.0000442) | (0.0000442) | (0.0000444) | (0.0000447) | (0.0000449) | (0.0000445) | (0.0000444) |
| Gender (1 if male) | 0.0432* | 0.0441* | 0.0445* | 0.0451* | 0.0455* | 0.0437* | 0.0438* | 0.0489** | 0.0404* | 0.0455* |
| | (0.0247) | (0.0246) | (0.0243) | (0.0243) | (0.0243) | (0.0244) | (0.0242) | (0.0244) | (0.0243) | (0.0244) |
| No. of children | -0.00597 | -0.00307 | 0.00565 | 0.00544 | 0.00347 | -0.00652 | 0.00146 | -0.00116 | 0.000887 | 0.00362 |
| | (0.0275) | (0.0273) | (0.0261) | (0.0262) | (0.0264) | (0.0268) | (0.0266) | (0.0265) | (0.0268) | (0.0264) |
| No. of persons | 0.00554 | 0.00511 | 0.00226 | 0.00306 | 0.00557 | 0.00886 | 0.00972 | -0.00229 | 0.00369 | 0.0104 |
| | (0.0200) | (0.0199) | (0.0189) | (0.0192) | (0.0196) | (0.0201) | (0.0204) | (0.0195) | (0.0202) | (0.0197) |
| **Marital status (Married = base case)** | | | | | | | | | | |
| Previously | 0.0391 | 0.0413 | 0.0482 | 0.0478 | 0.0475 | 0.0439 | 0.0436 | 0.0435 | 0.0430 | 0.0446 |
| married | (0.0328) | (0.0325) | (0.0314) | (0.0314) | (0.0315) | (0.0321) | (0.0317) | (0.0329) | (0.0324) | (0.0314) |
| Never been | 0.0242 | 0.0254 | 0.0330 | 0.0320 | 0.0321 | 0.0357 | 0.0205 | 0.0165 | 0.0309 | 0.0265 |
| married | (0.0440) | (0.0437) | (0.0425) | (0.0425) | (0.0425) | (0.0428) | (0.0433) | (0.0436) | (0.0433) | (0.0420) |
| **Level of highest education (No post-school education = base case)** | | | | | | | | | | |
| Bachelor degree | -0.00753 | -0.00708 | -0.00880 | -0.00832 | -0.00767 | -0.00765 | -0.00866 | -0.0147 | -0.00815 | -0.0113 |
| or higher | (0.0248) | (0.0247) | (0.0242) | (0.0243) | (0.0243) | (0.0245) | (0.0244) | (0.0245) | (0.0247) | (0.0242) |
| Other post-school | 0.0298 | 0.0311 | 0.0229 | 0.0253 | 0.0300 | 0.0274 | 0.0294 | 0.00920 | 0.0231 | 0.0307 |
| qualification | (0.0347) | (0.0347) | (0.0328) | (0.0334) | (0.0341) | (0.0343) | (0.0338) | (0.0337) | (0.0344) | (0.0333) |
| **Occupation (Managers and administrators = base case)** | | | | | | | | | | |
| Professionals | 0.0370 | 0.0376 | 0.0356 | 0.0360 | 0.0372 | 0.0372 | 0.0405 | 0.0333 | 0.0370 | 0.0377 |
| | (0.0378) | (0.0376) | (0.0372) | (0.0374) | (0.0375) | (0.0376) | (0.0378) | (0.0375) | (0.0383) | (0.0368) |
| Associate professionals | 0.0181 | 0.0196 | 0.0183 | 0.0196 | 0.0197 | 0.0161 | 0.0263 | 0.0209 | 0.0108 | 0.0251 |
| | (0.0432) | (0.0433) | (0.0429) | (0.0430) | (0.0430) | (0.0429) | (0.0437) | (0.0432) | (0.0432) | (0.0428) |
| Tradespersons | -0.0314 | -0.0298 | -0.0344 | -0.0348 | -0.0333 | -0.0319 | -0.0276 | -0.0368 | -0.0383 | -0.0340 |
| | (0.0450) | (0.0449) | (0.0444) | (0.0445) | (0.0446) | (0.0449) | (0.0452) | (0.0441) | (0.0453) | (0.0442) |
| Advanced clerical workers | -0.0986 | -0.0972 | -0.0975 | -0.0962 | -0.0960 | -0.0993 | -0.0724 | -0.102 | -0.101 | -0.0748 |
| | (0.0748) | (0.0748) | (0.0745) | (0.0746) | (0.0746) | (0.0746) | (0.0729) | (0.0738) | (0.0747) | (0.0726) |
| Intermediate clerical workers | 0.0730* | 0.0743* | 0.0804* | 0.0811** | 0.0831** | 0.0811** | 0.0824** | 0.0682* | 0.0785* | 0.0797* |
| | (0.0417) | (0.0416) | (0.0411) | (0.0412) | (0.0414) | (0.0413) | (0.0413) | (0.0414) | (0.0425) | (0.0412) |
| Production workers | 0.0699 | 0.0736 | 0.0591 | 0.0602 | 0.0591 | 0.0648 | 0.0562 | 0.0713 | 0.0833 | 0.0544 |
| | (0.0522) | (0.0519) | (0.0502) | (0.0502) | (0.0502) | (0.0515) | (0.0496) | (0.0526) | (0.0527) | (0.0493) |
| Elementary clerical workers | -0.0439 | -0.0225 | -0.0222 | -0.0193 | -0.0172 | -0.0445 | -0.0213 | -0.0461 | -0.0444 | -0.0165 |
| | (0.0708) | (0.0689) | (0.0671) | (0.0672) | (0.0673) | (0.0689) | (0.0673) | (0.0683) | (0.0689) | (0.0671) |
| Labourers | 0.0903* | 0.0922* | 0.0808 | 0.0827 | 0.0833 | 0.0855 | 0.0878* | 0.0891* | 0.0824 | 0.0783 |
| | (0.0530) | (0.0529) | (0.0522) | (0.0523) | (0.0522) | (0.0525) | (0.0526) | (0.0530) | (0.0526) | (0.0520) |

(continued on next page)

## Panel A) continued

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Country-of-origin characteristics:** | | | | | | | | | | |
| National Saving Rate | -0.00141 | | | | | | | | | |
| | (0.00122) | | | | | | | | | |
| Average National Saving Rate | | -0.00151 | | | | | | | | |
| | | (0.00133) | | | | | | | | |
| Age Dependency Ratio | | | 0.0000517 | | | | | | | |
| | | | (0.00131) | | | | | | | |
| Age Dependency Ratio (young) | | | | -0.000573 | | | | | | |
| | | | | (0.000856) | | | | | | |
| Age Dependency Ratio (old) | | | | | 0.00190 | | | | | |
| | | | | | (0.00155) | | | | | |
| GDP | | | | | | 0.0179* | | | | |
| | | | | | | (0.00981) | | | | |
| English Speaking | | | | | | | 0.0464* | | | |
| | | | | | | | (0.0240) | | | |
| Market Captitalisation | | | | | | | | 0.000183 | | |
| | | | | | | | | (0.000136) | | |
| Workers' Remittances | | | | | | | | | -0.00270 | |
| | | | | | | | | | (0.00308) | |
| Muslims | | | | | | | | | | -0.0994** |
| | | | | | | | | | | (0.0425) |
| Buddhists | | | | | | | | | | -0.0688 |
| | | | | | | | | | | (0.0462) |
| Chinese | | | | | | | | | | -0.00928 |
| Universists | | | | | | | | | | (0.0718) |
| Hindus | | | | | | | | | | -0.0904 |
| | | | | | | | | | | (0.0569) |
| Non-religious | | | | | | | | | | -0.0357 |
| | | | | | | | | | | (0.0734) |
| Constant | -2.606*** | -2.618*** | -2.847*** | -2.780*** | -2.780*** | -2.649*** | -2.602*** | -2.764*** | -2.750*** | -2.595*** |
| | (0.712) | (0.710) | (0.667) | (0.675) | (0.662) | (0.690) | (0.694) | (0.701) | (0.700) | (0.660) |
| Observations | 972 | 977 | 992 | 992 | 992 | 982 | 996 | 964 | 968 | 998 |
| Root MSE | 0.298 | 0.298 | 0.297 | 0.297 | 0.298 | 0.297 | 0.298 | 0.294 | 0.297 | 0.297 |
| R-squared | 0.301 | 0.301 | 0.311 | 0.310 | 0.309 | 0.302 | 0.303 | 0.307 | 0.304 | 0.308 |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR and location of household controls, which are not reported due to low significance. The sample is limited to immigrant household heads aged 15 or older who have non-missing data on country of origin with the household saving rates above -1.28 and below 0.79. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

## Panel B) aged 36 or older, individual level

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Household | 0.209*** | 0.211*** | 0.227*** | 0.225*** | 0.223*** | 0.217*** | 0.207*** | 0.213*** | 0.223*** | 0.219*** |
| income | (0.0663) | (0.0658) | (0.0629) | (0.0635) | (0.0638) | (0.0648) | (0.0671) | (0.0657) | (0.0660) | (0.0626) |
| Wealth | -0.000241 | -0.000246 | -0.000258 | -0.000257 | -0.000260 | -0.000261 | -0.000242 | -0.000251 | -0.000274 | -0.000235 |
| | (0.000191) | (0.000191) | (0.000189) | (0.000189) | (0.000189) | (0.000189) | (0.000192) | (0.000191) | (0.000191) | (0.000174) |
| Dependency ratio | -0.0966 | -0.0972 | -0.113 | -0.113 | -0.113 | -0.103 | -0.122 | -0.113 | -0.0980 | -0.106 |
| | (0.100) | (0.0997) | (0.0978) | (0.0978) | (0.0978) | (0.0993) | (0.0985) | (0.0996) | (0.1000) | (0.0976) |
| Age | -0.00655 | -0.00656 | -0.00641 | -0.00717 | -0.00747 | -0.00716 | -0.00635 | -0.00841 | -0.00658 | -0.00683 |
| | (0.00861) | (0.00857) | (0.00850) | (0.00854) | (0.00852) | (0.00858) | (0.00845) | (0.00858) | (0.00858) | (0.00842) |
| Age squared | 0.000103 | 0.000103 | 0.000106 | 0.000111 | 0.000112 | 0.000108 | 0.000101 | 0.000116* | 0.000105 | 0.000107 |
| | (0.0000700) | (0.0000698) | (0.0000691) | (0.0000693) | (0.0000692) | (0.0000695) | (0.0000690) | (0.0000695) | (0.0000697) | (0.0000687) |
| Gender (1 if male) | 0.0562** | 0.0568** | 0.0595** | 0.0600** | 0.0603** | 0.0568** | 0.0603** | 0.0612** | 0.0524* | 0.0585** |
| | (0.0278) | (0.0277) | (0.0272) | (0.0273) | (0.0273) | (0.0274) | (0.0273) | (0.0276) | (0.0273) | (0.0271) |
| No. of children | 0.000246 | 0.000810 | 0.00649 | 0.00602 | 0.00475 | 0.000255 | 0.00343 | -0.00122 | 0.00228 | 0.00751 |
| | (0.0313) | (0.0313) | (0.0300) | (0.0301) | (0.0302) | (0.0304) | (0.0303) | (0.0303) | (0.0308) | (0.0302) |
| No. of persons | -0.000214 | -0.00109 | -0.00326 | -0.00253 | -0.000626 | 0.00241 | 0.00298 | -0.000855 | -0.000568 | -0.000240 |
| | (0.0214) | (0.0213) | (0.0205) | (0.0207) | (0.0210) | (0.0214) | (0.0216) | (0.0208) | (0.0219) | (0.0208) |
| **Marital status (Married = base case)** | | | | | | | | | | |
| Previously | 0.0280 | 0.0297 | 0.0391 | 0.0393 | 0.0394 | 0.0371 | 0.0356 | 0.0367 | 0.0338 | 0.0327 |
| married | (0.0351) | (0.0348) | (0.0337) | (0.0337) | (0.0337) | (0.0342) | (0.0340) | (0.0345) | (0.0346) | (0.0339) |
| Never been | 0.0300 | 0.0315 | 0.0458 | 0.0455 | 0.0464 | 0.0440 | 0.0316 | 0.0221 | 0.0418 | 0.0388 |
| married | (0.0534) | (0.0530) | (0.0516) | (0.0516) | (0.0516) | (0.0520) | (0.0528) | (0.0523) | (0.0522) | (0.0515) |
| **Level of highest education (No post-school education = base case)** | | | | | | | | | | |
| Bachelor degree | -0.00144 | -0.00128 | -0.00612 | -0.00557 | -0.00553 | -0.00329 | -0.00611 | -0.00623 | -0.00416 | -0.00874 |
| or higher | (0.0266) | (0.0265) | (0.0261) | (0.0261) | (0.0261) | (0.0263) | (0.0262) | (0.0264) | (0.0265) | (0.0259) |
| Other post-school | 0.0372 | 0.0374 | 0.0252 | 0.0275 | 0.0314 | 0.0321 | 0.0301 | 0.0186 | 0.0295 | 0.0290 |
| qualification | (0.0371) | (0.0371) | (0.0356) | (0.0361) | (0.0366) | (0.0367) | (0.0362) | (0.0363) | (0.0371) | (0.0356) |
| **Occupation (Managers and administrators = base case)** | | | | | | | | | | |
| Professionals | 0.0581 | 0.0561 | 0.0564 | 0.0565 | 0.0569 | 0.0555 | 0.0612 | 0.0590 | 0.0569 | 0.0594 |
| | (0.0415) | (0.0412) | (0.0408) | (0.0408) | (0.0409) | (0.0410) | (0.0414) | (0.0409) | (0.0417) | (0.0401) |
| Associate professionals | 0.0598 | 0.0596 | 0.0597 | 0.0604 | 0.0601 | 0.0549 | 0.0671 | 0.0657 | 0.0499 | 0.0665 |
| | (0.0487) | (0.0488) | (0.0481) | (0.0481) | (0.0481) | (0.0482) | (0.0489) | (0.0486) | (0.0488) | (0.0480) |
| Tradespersons | -0.0166 | -0.0171 | -0.0229 | -0.0231 | -0.0209 | -0.0193 | -0.0142 | -0.0245 | -0.0286 | -0.0179 |
| | (0.0518) | (0.0517) | (0.0507) | (0.0508) | (0.0510) | (0.0514) | (0.0517) | (0.0508) | (0.0520) | (0.0504) |
| Advanced clerical workers | -0.0822 | -0.0817 | -0.0782 | -0.0769 | -0.0770 | -0.0784 | -0.0782 | -0.0795 | -0.0837 | -0.0809 |
| | (0.0839) | (0.0838) | (0.0835) | (0.0835) | (0.0835) | (0.0837) | (0.0837) | (0.0832) | (0.0839) | (0.0829) |
| Intermediate clerical workers | 0.0826* | 0.0822* | 0.0871* | 0.0878* | 0.0895* | 0.0864* | 0.0896* | 0.0751 | 0.0875* | 0.0923** |
| | (0.0476) | (0.0475) | (0.0470) | (0.0471) | (0.0472) | (0.0472) | (0.0473) | (0.0476) | (0.0484) | (0.0470) |
| Production workers | 0.0960* | 0.0970* | 0.0985* | 0.0991* | 0.0968* | 0.0922 | 0.0865 | 0.103* | 0.0964* | 0.0867 |
| | (0.0582) | (0.0581) | (0.0575) | (0.0575) | (0.0574) | (0.0575) | (0.0568) | (0.0593) | (0.0582) | (0.0564) |
| Elementary clerical workers | 0.0896 | 0.104 | 0.0917 | 0.0945 | 0.0962 | 0.0733 | 0.0963 | 0.0713 | 0.0700 | 0.0992 |
| | (0.0834) | (0.0805) | (0.0776) | (0.0777) | (0.0777) | (0.0801) | (0.0778) | (0.0797) | (0.0804) | (0.0774) |
| Labourers | 0.103* | 0.103* | 0.0911 | 0.0920 | 0.0919 | 0.0942 | 0.100* | 0.0931 | 0.0926 | 0.0889 |
| | (0.0596) | (0.0595) | (0.0583) | (0.0583) | (0.0583) | (0.0587) | (0.0588) | (0.0585) | (0.0590) | (0.0580) |

(continued on next page)

**Panel B) continued**

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Country-of-origin characteristics:** | | | | | | | | | | |
| National Saving Rate | -0.00230 | | | | | | | | | |
| | (0.00143) | | | | | | | | | |
| Average National Saving Rate | | -0.00236 | | | | | | | | |
| | | (0.00156) | | | | | | | | |
| Age Dependency Ratio | | | 0.000177 | | | | | | | |
| | | | (0.00160) | | | | | | | |
| Age dependency Ratio (young) | | | | -0.000635 | | | | | | |
| | | | | (0.000999) | | | | | | |
| Age Dependency Ratio (old) | | | | | 0.00196 | | | | | |
| | | | | | (0.00169) | | | | | |
| GDP | | | | | | 0.0195* | | | | |
| | | | | | | (0.0107) | | | | |
| English Speaking | | | | | | | 0.0518** | | | |
| | | | | | | | (0.0254) | | | |
| Market Capitalisation | | | | | | | | 0.000218 | | |
| | | | | | | | | (0.000158) | | |
| Workers' Remittances | | | | | | | | | -0.00372 | |
| | | | | | | | | | (0.00348) | |
| Muslims | | | | | | | | | | -0.0804* |
| | | | | | | | | | | (0.0469) |
| Buddhists | | | | | | | | | | -0.128** |
| | | | | | | | | | | (0.0566) |
| Chinese | | | | | | | | | | -0.0529 |
| Universists | | | | | | | | | | (0.0814) |
| Hindus | | | | | | | | | | -0.0697 |
| | | | | | | | | | | (0.0618) |
| Non-religious | | | | | | | | | | -0.0757 |
| | | | | | | | | | | (0.0804) |
| Constant | -1.999** | -2.020** | -2.263*** | -2.186*** | -2.213*** | -2.154*** | -2.063*** | -2.045*** | -2.189*** | -2.130*** |
| | (0.793) | (0.786) | (0.760) | (0.764) | (0.747) | (0.764) | (0.775) | (0.778) | (0.777) | (0.739) |
| Observations | 841 | 844 | 855 | 855 | 855 | 849 | 857 | 837 | 840 | 859 |
| Root MSE | 0.305 | 0.305 | 0.303 | 0.303 | 0.303 | 0.304 | 0.304 | 0.302 | 0.304 | 0.302 |
| R-squared | 0.271 | 0.272 | 0.281 | 0.280 | 0.280 | 0.277 | 0.275 | 0.273 | 0.277 | 0.284 |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR and location of household controls, which are not reported due to low significance. The sample is limited to immigrant household heads aged 36 or older who have non-missing data on country of origin with the household saving rates above -1.28 and below 0.79. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

**Panel C) aged 15 or older, individual level**

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Income | 0.0440*** | 0.0438*** | 0.0447*** | 0.0446*** | 0.0438*** | 0.0426*** | 0.0407*** | 0.0434*** | 0.0441*** | 0.0415*** |
| | (0.0108) | (0.0109) | (0.0105) | (0.0105) | (0.0105) | (0.0103) | (0.0104) | (0.0104) | (0.0105) | (0.0104) |
| Wealth | -0.0000217 | -0.0000224 | -0.0000102 | -0.0000136 | -0.0000179 | -0.0000321 | -0.0000346 | -0.0000246 | -0.0000327 | -0.00000930 |
| | (0.0000920) | (0.0000924) | (0.0000921) | (0.0000922) | (0.0000922) | (0.0000917) | (0.0000920) | (0.0000912) | (0.0000922) | (0.0000884) |
| Age | -0.00416 | -0.00368 | -0.00403 | -0.00424 | -0.00438 | -0.00473 | -0.00403 | -0.00414 | -0.00462 | -0.00384 |
| | (0.00343) | (0.00343) | (0.00340) | (0.00340) | (0.00340) | (0.00339) | (0.00339) | (0.00342) | (0.00341) | (0.00339) |
| Age squared | 0.0000573* | 0.0000526 | 0.0000568* | 0.0000574* | 0.0000579* | 0.0000595* | 0.0000557* | 0.0000540* | 0.0000611* | 0.0000538* |
| | (0.0000327) | (0.0000327) | (0.0000324) | (0.0000324) | (0.0000324) | (0.0000323) | (0.0000323) | (0.0000325) | (0.0000324) | (0.0000324) |
| Gender (1 if male) | 0.00758 | 0.00938 | 0.00941 | 0.00958 | 0.00879 | 0.00783 | 0.00620 | 0.0129 | 0.00676 | 0.00728 |
| | (0.0177) | (0.0177) | (0.0175) | (0.0175) | (0.0175) | (0.0174) | (0.0174) | (0.0176) | (0.0176) | (0.0174) |
| No. of children | -0.0458*** | -0.0455*** | -0.0435*** | -0.0434*** | -0.0436*** | -0.0467*** | -0.0438*** | -0.0471*** | -0.0432*** | -0.0407*** |
| | (0.0140) | (0.0141) | (0.0138) | (0.0138) | (0.0138) | (0.0138) | (0.0138) | (0.0139) | (0.0139) | (0.0138) |
| No. of persons | 0.0239*** | 0.0238*** | 0.0241*** | 0.0243*** | 0.0250*** | 0.0260*** | 0.0263*** | 0.0214** | 0.0246*** | 0.0252*** |
| | (0.00920) | (0.00924) | (0.00909) | (0.00909) | (0.00909) | (0.00904) | (0.00909) | (0.00909) | (0.00911) | (0.00911) |
| Head | -0.258*** | -0.254*** | -0.258*** | -0.257*** | -0.257*** | -0.260*** | -0.259*** | -0.255*** | -0.256*** | -0.251*** |
| | (0.0386) | (0.0387) | (0.0378) | (0.0378) | (0.0378) | (0.0376) | (0.0378) | (0.0382) | (0.0379) | (0.0378) |
| Spouse | -0.190*** | -0.187*** | -0.189*** | -0.189*** | -0.190*** | -0.195*** | -0.196*** | -0.187*** | -0.191*** | -0.189*** |
| | (0.0392) | (0.0394) | (0.0386) | (0.0386) | (0.0386) | (0.0384) | (0.0386) | (0.0388) | (0.0386) | (0.0385) |
| **Marital status (Married = base case)** | | | | | | | | | | |
| Previously | -0.0890*** | -0.0845*** | -0.0810*** | -0.0804*** | -0.0807*** | -0.0835*** | -0.0823*** | -0.0840*** | -0.0878*** | -0.0829*** |
| married | (0.0267) | (0.0268) | (0.0265) | (0.0265) | (0.0265) | (0.0264) | (0.0264) | (0.0266) | (0.0266) | (0.0265) |
| Never been | -0.0901** | -0.0891** | -0.0892** | -0.0897** | -0.0898** | -0.0862** | -0.100*** | -0.0969*** | -0.0876** | -0.0962*** |
| married | (0.0356) | (0.0357) | (0.0352) | (0.0352) | (0.0352) | (0.0352) | (0.0351) | (0.0356) | (0.0356) | (0.0351) |
| **Level of highest education (No post-school education = base case)** | | | | | | | | | | |
| Bachelor degree | -0.00339 | -0.00661 | -0.00808 | -0.00852 | -0.00800 | -0.00538 | -0.00824 | -0.00974 | -0.00499 | -0.0109 |
| or higher | (0.0193) | (0.0193) | (0.0191) | (0.0191) | (0.0191) | (0.0190) | (0.0191) | (0.0192) | (0.0192) | (0.0191) |
| Other post-school | 0.0491** | 0.0486** | 0.0454** | 0.0465** | 0.0496** | 0.0477** | 0.0471** | 0.0379* | 0.0471** | 0.0467** |
| qualification | (0.0213) | (0.0213) | (0.0209) | (0.0209) | (0.0210) | (0.0209) | (0.0208) | (0.0210) | (0.0211) | (0.0209) |
| **Employment status ( Employed = base case)** | | | | | | | | | | |
| Unemployed | -0.0572 | -0.0568 | -0.0557 | -0.0545 | -0.0532 | -0.0549 | -0.0537 | -0.0622 | -0.0539 | -0.0476 |
| | (0.0576) | (0.0579) | (0.0570) | (0.0570) | (0.0569) | (0.0564) | (0.0568) | (0.0594) | (0.0583) | (0.0569) |
| Not in labour force | -0.0888*** | -0.0897*** | -0.0902*** | -0.0897*** | -0.0909*** | -0.0893*** | -0.0914*** | -0.0845*** | -0.0889*** | -0.0918*** |
| | (0.0248) | (0.0248) | (0.0244) | (0.0244) | (0.0244) | (0.0243) | (0.0244) | (0.0245) | (0.0245) | (0.0244) |

(continued on next page)

## Panel C) continued

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Country-of-origin characteristics:** | | | | | | | | | | |
| National Saving Rate | -0.00180** | | | | | | | | | |
| | (0.000880) | | | | | | | | | |
| Average National Saving Rate | | -0.00166* | | | | | | | | |
| | | (0.000973) | | | | | | | | |
| Age Dependency Ratio | | | -0.000162 | | | | | | | |
| | | | (0.000991) | | | | | | | |
| Age Dependency Ratio (young) | | | | -0.000687 | | | | | | |
| | | | | (0.000628) | | | | | | |
| Age Dependency Ratio (old) | | | | | 0.00204* | | | | | |
| | | | | | (0.00114) | | | | | |
| GDP | | | | | | 0.0239*** | | | | |
| | | | | | | (0.00696) | | | | |
| English Speaking | | | | | | | 0.0631*** | | | |
| | | | | | | | (0.0164) | | | |
| Market Capitalisation | | | | | | | | 0.000381*** | | |
| | | | | | | | | (0.000107) | | |
| Workers' Remittances | | | | | | | | | -0.00473** | |
| | | | | | | | | | (0.00205) | |
| Muslims | | | | | | | | | | -0.0928*** |
| | | | | | | | | | | (0.0336) |
| Buddhists | | | | | | | | | | -0.0431 |
| | | | | | | | | | | (0.0344) |
| Chinese Universists | | | | | | | | | | 0.00267 |
| | | | | | | | | | | (0.0559) |
| Hindus | | | | | | | | | | -0.0641 |
| | | | | | | | | | | (0.0434) |
| Non-religious | | | | | | | | | | -0.0673 |
| | | | | | | | | | | (0.0530) |
| Constant | 0.102 | 0.0863 | 0.0567 | 0.0807 | 0.0336 | 0.0649 | 0.0634 | 0.0442 | 0.0888 | 0.0857 |
| | (0.129) | (0.130) | (0.134) | (0.127) | (0.125) | (0.122) | (0.123) | (0.125) | (0.125) | (0.124) |
| Observations | 1749 | 1761 | 1795 | 1795 | 1795 | 1778 | 1803 | 1742 | 1750 | 1806 |
| Root MSE | 0.325 | 0.326 | 0.326 | 0.326 | 0.326 | 0.323 | 0.326 | 0.322 | 0.324 | 0.326 |
| R-squared | 0.121 | 0.118 | 0.120 | 0.121 | 0.121 | 0.124 | 0.127 | 0.124 | 0.122 | 0.126 |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. The sample is limited to immigrant respondents aged 15 or older who have non-missing data on country of origin with the household saving rates above -1.28 and below 0.79. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

An explanation for these results is as follows. Individuals from wealthy countries represented by a higher GDP per capita are more likely to have higher financial wealth when they migrate to Australia. This can provide them additional income in the form of bank interest or dividends and hence their ability to accumulate more savings. Immigrants who speak English will be at more ease with using the services of financial institutions. Likewise, there is a higher likelihood for immigrants from countries with developed stock markets to participate in financial markets and thus accumulate more financial wealth.

The negative relationship between the saving rate of immigrants and remittances received by their home countries is contrary to expectations. The household saving rate in this research, by definition, does not account for remittances sent to the home country. Hence, if individuals remit some part of their income, then their higher domestic saving rate is positively correlated with the amount they send from Australia and accordingly received by their home country. Therefore, the relationship between immigrants' saving rates and remittances received by their countries of origin is not so straightforward and there are probably other factors causing this negative influence.

The differences in the saving rates of immigrants from countries having a dominant religion of Islam or Buddhism from the saving rates of the base group are driven by just a few observations due to underrepresentation of the respondents from countries following any other religion, except Christianity, in HILDA. For example, when the dataset is limited to the 36+ household heads, there are 766 respondents from countries where Christianity is dominant compared to 54 respondents from countries where Islam is the dominant religion, 36 for Buddhism, 15 for Chinese Universists and 27 for Hinduism. Hence, although religion is an important determinant of saving behaviour, it is not possible to make a true comparison due to the small number of observations in the HILDA dataset.

The negative association of the aged dependent population ratio in an immigrant's home country with their household saving rates in Australia confirms the foresight motive of the life-cycle hypothesis, according to which households save to pay for the inevitable expenses of the future. A higher percentage of aged population who are not in the labour force means that individuals are encouraged to save more to provide for their retirement. Interestingly, the ratio of dependent young and aged population to the working-age population and the ratio representing only young dependents do not affect immigrant savings. This could mean that higher savings are particularly encouraged in countries that have an ageing population.

The negative coefficient on the national saving rate shows that immigrants from countries that save more have a tendency to save less than immigrants from countries with a lower saving rate. This phenomenon could be explained either by the fact that immigrants change their saving habits once they settle in Australia or by the lack of information on the remittances sent to the home countries. One of the reasons that immigrants from countries with high saving rates do not save as much as they used to once they move to Australia could be the high level of Australian social security. As opposed to living in countries with low social security provision where they had to rely on their savings in an emergency, immigrants in Australia do not need to save so much due to the availability of support schemes such as age and disability pensions, unemployment benefit and paid sick leave. Alternatively, the saving rates of immigrant households are defined as the proportion of their disposable income after all household expenses are paid from total disposable income, so remittances could be included in the total saving rate if a certain unreported share of their income is sent to their home country. In this case, a high household saving rate in Australia could mean that the recipient country's economy is not stable and has low savings. The last argument, however, contradicts the negative influence of remittances received by home countries on the household saving rates of their emigrants in Australia. In addition, a lack of data does not allow testing of both propositions, which might be of interest in the future.

A similar pattern in the saving rates of individuals from different countries is observed in Table 3.5, where their household saving rates in Australia, averaged for each country of origin, are compared with their respective country-of-origin national saving rates. This comparison is limited to individuals from 14 countries which are represented by at least 30 respondents. A high negative correlation coefficient of -0.81 between the national saving rate and the average household saving rate of migrants from those 14 countries, including all household members and not just household heads, also confirms the findings.

**Table 3.5 Comparison of immigrants' household saving rates in Australia averaged by their countries of origin, with the respective countries-of-origin national saving rates**

| Country name | No. of respondents | Average household saving rate in Australia | Standard deviation | Country-of-origin national saving rate |
|---|---|---|---|---|
| China | 37 | 10.50 | 0.63 | 53.77 |
| Italy | 61 | 21.95 | 0.42 | 20.03 |
| Sri Lanka | 40 | 24.56 | 0.29 | 22.37 |
| Vietnam | 48 | 25.42 | 0.40 | 37.08 |
| India | 48 | 25.97 | 0.42 | 36.03 |
| Netherlands | 65 | 26.23 | 0.38 | 29.38 |
| Malaysia | 35 | 27.51 | 0.41 | 38.41 |
| Ireland | 31 | 28.76 | 0.31 | 29.83 |
| Philippines | 69 | 30.38 | 0.30 | 30.79 |
| New Zealand | 219 | 30.94 | 0.28 | 16.11 |
| United Kingdom | 682 | 30.83 | 0.32 | 15.38 |
| South Africa | 56 | 33.88 | 0.28 | 14.77 |
| Germany | 69 | 35.11 | 0.31 | 23.55 |
| United States | 34 | 36.09 | 0.32 | 14.74 |

**Notes:** The sample is restricted to respondents aged 15 or older who have non-missing data on country of origin with the household saving rates above -1.28 and below 0.79. The number of countries is limited to those with at least 30 representatives.

## 3.5 Conclusions

The main goal of the analysis reported in this chapter was to determine what characteristics of household heads and other Australian residents affect their household saving rates. Another goal was to see if ethnic diversity is one of these determinants, thus contributing to the existing research on the importance of country-of-origin effects for economic outcomes. Home-country proxies in this research were represented by the quality of home-country institutions, national saving rates, GDP per capita and other country-of-origin characteristics, and economic outcomes were represented by the saving rates of immigrants in Australia. The presence of country-of-origin effects was investigated by testing whether household saving rates differ between native-born and foreign-born Australians, controlling for characteristics of household heads as well as all individuals. A more detailed analysis was then applied to immigrant households and individuals. The average immigrant saving rates in Australia, obtained for each country of origin, were also compared with their respective national saving rates, thus testing whether the saving differentials across countries stem not only from economic factors but also from country-specific differences.

The empirical results reported in this chapter show that: first, immigrant households have lower saving rates than native-born households, which is also applicable when household savings are examined with respect to all household members; second, a country's strong institutional environment positively influences the saving-related decisions of its people who migrate to Australia, and this effect is present at the household level as well as the individual level; and third, a negative correlation between a country's national saving rate and the household saving rates of its emigrants to Australia exists when the sample is extended to include all household members.

The initial step of the analysis identified the factors affecting the saving rates of Australian households and detected different saving rates for foreign-born households. An average Australian household has a higher saving rate if it has a higher income, a lower wealth accumulation, fewer children and a lower number of dependents. Furthermore, saving rates are lower for households with female household heads than for male-headed households. Those who work as managers or administrators save less than labourers, production workers or intermediate clerical workers. This is consistent with the lower saving rates associated with higher education levels. Lower saving rates are observed for the household heads in a permanent relationship compared to their single or divorced counterparts. At the same time,

saving rates are significantly higher for household heads born in Australia than for those born abroad. This is also applicable to the outcome of the analysis of household savings at an individual level. Owing to the saving definition used in this research, the observed savings gap would be expected to be even greater should data on immigrants' remittances be available and accounted for.

By limiting the sample to immigrants and including their home country characteristics, it was possible to identify the country-of-origin effects on their household saving rates in Australia. While all immigrants are subject to the same formal regulation in Australia, their home institutions can still influence them even after migration. For example, their saving rates are positively associated with the higher values of the Aggregate Governance Indicators for their home countries such as Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law and Corruption Control. The saving rates are also higher for the households whose heads are from countries that follow the British legal system traditions. These factors and a few additional institutional factors also influence the saving rates of immigrant households when these rates are investigated with respect to all household members. These results are consistent with the findings reported in Chapter 2 on the positive correlation of country-of-origin institutional quality and financial market participation of immigrants in Australia.

The investigation of other country-of-origin factors affecting household saving at an individual level revealed the following findings. The household saving rates of immigrants to Australia are positively correlated with the ratio of the aged dependent population, GDP per capita and the level of market capitalisation in their home countries. Furthermore, originating from English-speaking countries also positively influences the saving ability of immigrants. In contrast, remittances received by a home country have a negative association with the saving rates of its people when they migrate to Australia. An effect from religion is evident only when immigrants from countries that follow Islam are compared to immigrants from countries following Christianity, with significantly lower saving rates being recorded for the former group. This is also applicable to the analysis of saving rates at the household level. When young household heads are excluded from the sample, only immigrants from the countries following the Buddhist religion have significantly lower saving rates than the base group following the Christian religion. These results though can be misleading; they are driven by just a few observations since there is an insufficient representation from countries with dominant religions other than Christianity. The saving rates of immigrant households in

Australia are also positively associated with their household heads originating from countries with a high GDP per capita and countries with English as an official language.

The negative correlation between the household saving rates in Australia and the national saving rates for all members of immigrant households is another rather surprising finding of this research. However, this is consistent with the empirical evidence (Carroll, Rhee & Rhee 1999) that has failed to find a resemblance between the saving patterns of American immigrants and their respective national saving rates. Carroll, Rhee and Rhee (1999) explained these results by either the different reasons for migration of individual immigrants with different social backgrounds from different countries or a strong correlation between immigrants' saving behaviour in the US and their initial socioeconomic strata.

The contribution of this research to the explanation of the national saving rates differential is the evidence of a negative relationship between the domestic saving rates of immigrants to Australia and their home countries' national saving rates. These results suggest that either the domestic saving rates do not account for the amounts remitted to their home countries by Australian immigrants or that their saving patterns change when they migrate (possibly driven by low-income countries). One possible reason for this change could be that due to the lack of social security in their home countries immigrants were forced to save more there than they do once they migrate to Australia. In addition, immigrants' high savings in Australia could mean that they remit high amounts to their less developed home countries that have low national saving rates. These hypotheses, however, require deeper analysis and could be the direction of future research.

The limitations of the current version of the HILDA data do not allow testing of the changes in the saving behaviour of immigrants over time. It is possible that with changes in social and economic conditions, people's perception of the importance of savings might also change. Hence, the inclusion of another set of observations on the same individuals (when available) that has information on both household wealth and household expenses might account for this possible change over time. Likewise, the absence of data on remittances in HILDA might affect the analysis of the saving behaviour of those immigrants who transfer money overseas to support their families. These data, fortunately, are available in the survey carried out by the Department of Immigration and Citizenship and were used for the analysis reported in the next chapter.

# CHAPTER 4. REMITTANCES OF AUSTRALIAN IMMIGRANTS: DO IMMIGRATION LAWS MATTER?

## 4.1 Introduction

The focus of this chapter is on the remittance outflows initiated by immigrants in Australia. A discussion of the economic impact of immigration cannot be complete without analysing their willingness and ability to remit. Previous chapters analysed aspects of the financial behaviour of Australian immigrants that are conducive to wealth accumulation such as saving behaviour and the propensity to take financial risk. For a balanced view, it is beneficial to also analyse the wealth-dissipating aspects of immigrants' financial situation, such as the financial assistance provided to their families and friends overseas.

The increase in migration flows from developing to developed countries increases remittance flows in the opposite direction. Indeed, as argued by Abdih et al. (2008), there has been a rapid growth in remittances to many developing countries since the 1990s. Recent reports from the World Bank show a surge in the outward remittances from Australia, in line with this global increase, starting from 2001. This coincides with the changes in the Australian immigration policy introduced in 1999, which tightened entry requirements and put more emphasis on the business category. Due to the lengthy process of application for permanent residency, it is possible that the consequences of the new laws only came into full effect a few years later and, hence, can be observed from 2001.

These changes in the law could have impacted on the profile of new immigrants and thus affected their remittances. Most skilled migrants are subjected to the points test which has become more difficult to pass since the Review of the Independent and Skilled-Australian Linked Categories in 1999. The Review was supposed to discourage unqualified applicants from applying for skilled visas and to attract individuals with a higher earning ability. Unlike applicants for other visa types, such as family visas, skilled independent applicants are expected to be better off and to have fewer dependents left in their home countries. Thus, the rapid increase in the arrivals of independent migrants to Australia from 1998, registered by the Department of Immigration and Citizenship (2008), could have contributed to the rise in outward remittances from the country.

This possible link of the size of outward remittances to immigration policies underlines the importance of a detailed analysis of the determinants of remitting behaviour. Although

remittances are beneficial for the economies of the recipient countries, uncontrolled high remitted amounts can have a detrimental effect on the host economy. Knowledge of the factors affecting remittance outflows could be useful in managing government policies of the outflow countries for an optimum economic outcome. If the possible relation between remittances and immigration policies proved to be true, government policies could be also used to control remitting outflows through the management of immigration inflows to the country. Despite its importance, the remitting performance of immigrants remains relatively understudied.

The factors that determine immigrants' willingness and ability to remit were investigated, with the focus on the effects of recent changes in Australian immigration policies. First, the most suitable approach for examining immigrants' remitting behaviour was identified based on three popular models: the two-part model, the Tobit model and the Heckman two-step model. Based on this selection, the importance of the personal factors that determine the remitting behaviour of immigrants was investigated, including the category of their entry visa to Australia. The different visa effects on the remitting behaviour before and after the change to immigration laws might reflect a changed pattern of immigrants with different levels of willingness and ability to remit. A comparison of the components of the remittances of two cohorts of immigrants arriving in Australia during different policy regimes, with special emphasis on their entry visa, should be able to shed light on how the recent change in the immigration policy has influenced immigrants' remitting behaviour.

Data from the Longitudinal Survey of Immigrants to Australia (LSIA) fitted the purpose of this investigation better than the previously used Household, Income and Labour Dynamics in Australia (HILDA) Survey. Unlike the HILDA survey, LSIA's specific focus on migrant population provides information about their remittances, the types of visa they used to enter Australia and their relatives not living in Australia, in addition to providing the common demographic characteristics used throughout this thesis, such as age, gender and education. Whether or not immigrants have relatives in their countries of origin relates to the demand-side pressures from these countries (Brown 1997). Together with the supply-side variables, such as income and wealth, affecting migrants' capacity to remit, these variables cover most factors influencing their decision to remit. Remittances in this research are defined as the amounts of money sent to relatives and friends overseas. It is assumed that if immigrants provide financial help to their family members not living in Australia, then those family members live in the immigrants' countries of origin.

The findings reported in this chapter revealed that: first, the Heckman two-step was the most suitable approach for the analysis of the remitting behaviour of the immigrants of the first cohort from LSIA and the two-part model with the ordered dependent model used for the analysis of remitted amount was the best model for the second cohort; and second, the changes to the points test described above did not affect immigrants' remitting probability but they did impact on the amounts transferred by those who decided to remit. The stricter entry requirements shortlisted applicants for an Independent Visa in the later cohort to more skilled and educated individuals compared to the first cohort, which arrived in Australia before these changes. As a result, Independent Visa holders in the second cohort can earn a higher income than applicants for a Family Visa, an income which is comparable to that earned by Business Visa holders. According to the findings, the change in the recent immigrant's profile triggered by an increase in the number of independent applicants can explain the rapid increase in outward remittances from Australia from 2001. As a result of amendments to the points test, these immigrants are more financially stable than the independent applicants who arrived in Australia before the reform.

The remaining content of this chapter is structured as follows: Section 4.2 describes recent trends in immigration to Australia; Section 4.3 presents the relevant literature review; Section 4.4 describes the data and methodology used in this part of the study; Section 4.5 presents results, which are followed by the conclusions section.

## 4.2 Recent immigration patterns

Immigration policies do not have an equal effect on every applicant for an Australian visa but their influence is similar for people holding similar types of visa. Based on data availability and following the classification used in recent studies (Chiswick & Miller 2004; Cobb-Clark & Chapman 1999; Thapa & Gorgens 2006), all immigrants in this research were grouped into categories based on their entry visa. One of the broad classifications proposed by LSIA, a primary dataset used in this chapter, created five main categories named here as Family, Humanitarian, Skilled-Independent, Skilled-Sponsored and Skilled-Business. The description of these categories is summarised in Table 4.1[22].

[22] The names of visa categories have changed between surveys. For example, Skilled-Australian Sponsored category, which allowed admission of skilled migrants who had close family ties in Australia, was formerly known as Skilled-Australian Linked category and before that termed the Concessional Family Category. Following Chiswick and Miller (2004), the names used in the late 1990s are used in this study.

**Table 4.1 Visa categories available in LSIA**

| Visa categories |
|---|
| **Family.** Preferential Family (spouses, dependent children, parents meeting balance of family test, last remaining relatives etc.) |
| **Humanitarian.** Offshore resettlement program and onshore protection for those persons already in Australia. |
| **Skilled:** |
| - **Independent.** Unsponsored applicants. **Points tested.** |
| - **Sponsored.** Skilled-Australian Sponsored or Concessional Family before 1997 (Allows sponsoring nondependent children, brothers or sisters, parents not meeting the balance family test etc.), Skilled-Regional Designated Area Sponsored (introduced in 1997, allows sponsorship of skilled relatives to designated areas of Australia). **Points tested.** |
| - **Business.** Business Skills, Distinguished Talents and Employer Nomination Scheme (ENS) (Successful business persons intending to migrate as shareholders or sole owners of a business; individuals with special or unique talents; highly skilled workers sponsored by Australian employers to work in their business). |

**Source:** Australian Immigration Consolidated Statistics (2002), Antecol, Cobb-Clark and Trejo(2003), Chiswick and Miller (2004) and DIAC (2008).

The amendments to the Australian immigration policy in the late 1990s mainly affected the points-tested Independent Visa and Concessional Family Visa classes. First, the Concessional Family category was replaced with the new Skilled-Australian Linked category in 1997, resulting in a decrease of Family stream migration in favour of Skilled migration (Richardson & Lester 2004). Second, the increased emphasis on skills by the Australian Government was evident in the change in the nature of the points test made effective on 1 July 1999 (Hawthorne 2005). For example, as argued by Thapa and Gorgens (2006), in addition to satisfying an aggregate minimum score, applicants had to pass other requirements such as not being older than 45 at the time of application and having a specified level of English proficiency. Likewise, awarding additional points for having an occupation from the Priority Occupation List, not practised since October 1992, was re-introduced in the points test in 1999 (Chiswick & Miller 2004). Table 4.2 compares the points test requirements before and after the July 1999 changes.

**Table 4.2 Comparison of the points testing system before and after amendment on 1 July 1999**

| Characteristics | August 1993 | July 1999 |
|---|---|---|
| Pass mark for Skilled-Independent | 110 | 110 |
| Pass mark for Skilled-Sponsored | 100 | 110 |
| Maximum age requirement | 59 female, 64 male | 44 |
| Minimum English language proficiency | No limit | Vocational English |
| **Maximum points for:** | | |
| Skills | 80[a] | 60 |
| Age | 30 | 30 |
| English language proficiency | 20[b] | 20 |
| Specific work experience | | 10 |
| Occupational demand/job offer | | 15 |
| Australian qualification | | 15 |
| Regional Australia / Low population | | 5 |
| Spouse Skills | | 5 |
| Sponsorship (Skilled-Sponsored only) | 15 | 15 |
| Australian Citizenship of sponsor (Skilled-Sponsored only) | 15 | |
| Settlement of sponsor in Australia (Skilled-Sponsored only) | 10 | |
| Sponsor location (Skilled- Sponsored only) | 5 | |
| **Total maximum points** | **175** | **175** |

**Notes**: [a] Also accounts for post-qualification work experience for those who completed tertiary education.

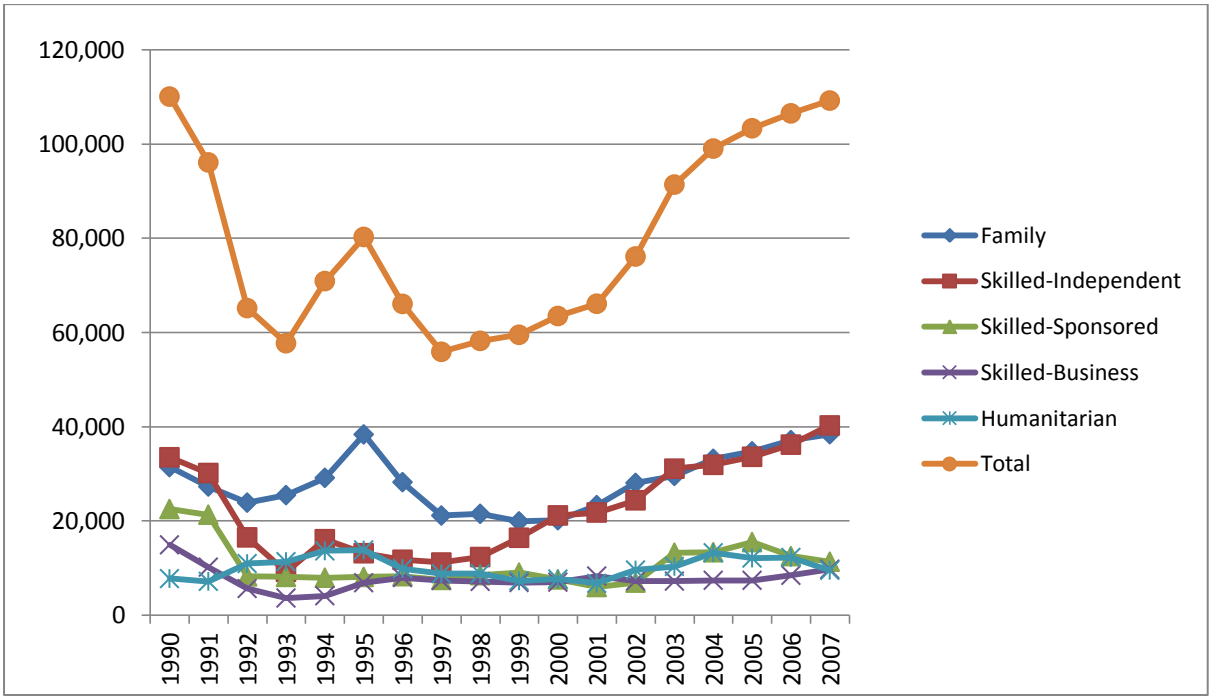
[b] Applies to Skilled-Independent immigrants only.

**Source**: Chiswick and Miller (2004) and Walsh (2008).

Immigration flows to Australia, however, did not decrease after the introduction of these restrictions to the selection criteria; instead, they increased, probably reflecting the increase in immigration flows worldwide. As Figure 4.1 shows, this general trend applied to the Independent Visa holders but not to those immigrants who were sponsored by their relatives. The number of sponsored immigrants decreased in 2000, reflecting their inability to get

additional points for having an Australian sponsor as well as the additional age and English language proficiency requirements introduced in the new points test. The decrease in immigration rates prior to these reforms could be credited to other government initiatives such as the waiting period for receiving social security payments for newly arrived immigrants being extended from six months to two years from May 1996 (*Social Security Legislation Amendment [Newly Arrived Resident's Waiting Period and Other Measures]Bill*). As a result, the decline in immigration in 1996–1998 was mostly attributable to a decrease in the number of migrants in the Family category. After that decline, immigration flows showed a growth tendency, reflecting an increase in the biggest visa groups, that is, the Family and Independent categories.

**Figure 4.1 Immigration flows to Australia, 1990–2007 (in persons)**



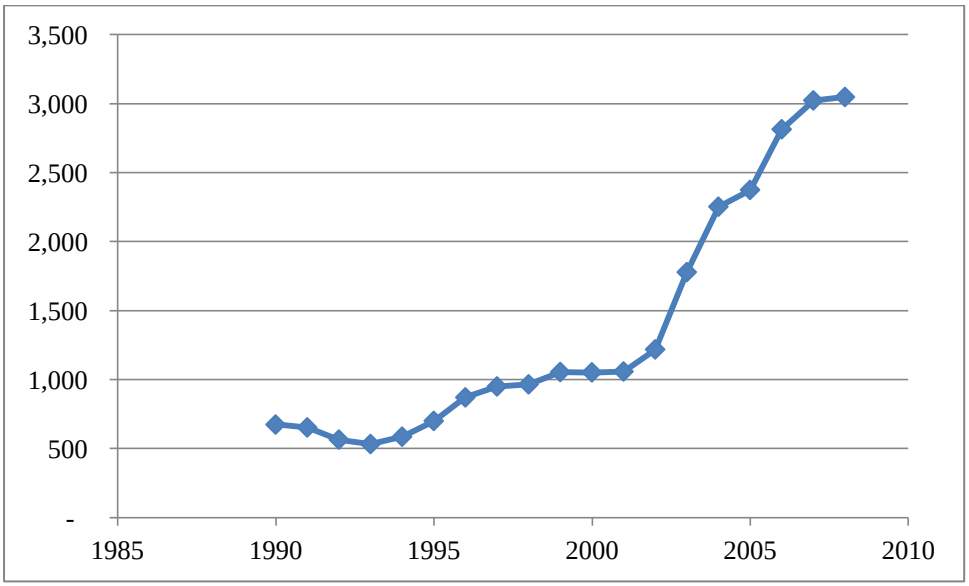

**Notes:** Does not include immigrants arrived under Special Eligibility Program and non-program migration mostly used for migration by New Zealand citizens.

**Source:** DIMIA(2002), DIAC (2008).

In general, the rises and falls in the remitting outflow from Australia have coincided with the rises and falls in the immigration flow to Australia, suggesting that new migrants are the main remitting participants. Moreover, the growth of the remittance outflow during 2000–2007 was stronger than the growth in the immigrant population of Australia, as Figure 4.2 reflects (187 per cent versus 72 per cent, according to data from the World Bank (2011) and DIAC (2008)). The most recent decrease in the remitting outflow was registered in the early 2000s,

just a few years after the 1996–1998 fall in the migrant flow to Australia. After that, the remittance outflow soared in response to an increase in immigration to the country. This increase in the remittance outflow, however, was more than proportional to the increase in immigration, suggesting that there could be other influencing factors. The change in the recent immigrant's profile due to the amendments to the Australian immigration policies could be one of the explanations for the change in remitting behaviour.

**Figure 4.2 Remittances outflows from Australia, 1990–2008 (in million USD)**




**Source:** World Bank (2011).

## 4.3 Literature review

The motives for the pursuit of better well-being overseas are based on push and pull factors, intervening obstacles and personal factors (Lee 1966). Unfavourable characteristics of the area where one lives are push factors whereas pull factors are the attractive qualities of another area. Wars, loss of wealth, lack of political or religious freedom, lower wages or fewer opportunities can push an individual to leave their country. However, not all countries are equally attractive for relocation or ready to accept new settlers. The selection of a new home depends on a number of pull factors such as political or religious freedom, living conditions and job opportunities as well as personal preferences and obstacles such as a country's immigration laws.

Following political pressures in the mid-1990s and adapting within the global system, since 1996 there has been shift in the Australian immigration laws towards the skilled migration. In

particular, as reported by Walsh (2008), globalisation demanded an expansion of certain economic sectors such as information technology and advanced business and producer services. This resulted in a 30 per cent increase in the relative size of the skills intake after 1996, despite a reduction in the overall migration program (non-humanitarian) from 82,000 to 74,000 per annum (Borooah & Mangan 2007). At the same time, to ensure that new immigrants would not be a burden on society, the period before they could access social security payments was increased from six months to two years (Shah & Burke 2005).

Migration decisions are often not just individual choices but rather taken within the family context. The difference in immigrants' wages before and after migration is supposed to be sufficient not only to compensate for the temporary hardship and personal sacrifices of the new immigrants but also to support their families. The complicated process of migration can make it impossible to bring some family members, or those family members who meet the eligibility requirements might wait for a substantial time to join the primary applicants for Australian residency. Therefore, sometimes remitting cash is the only way to provide financial assistance to the family members left in the home country.

These transfers are not only crucial for households' well-being but also for the recipient economies. Moreover, Fan (2009) admitted that in some labour-exporting countries, such as Mexico and Indonesia, remittances account for a significant part of their national income. Tonga and Samoa were top remittance recipients in 2009 with the former receiving remittances corresponding to 27.7 per cent of its GDP and the latter 22.3 per cent. These Pacific Island countries are among those classified as MIRAB states where Migration, Remittances, Aid and the resultant Bureaucracy are central to their socio-economic systems (Brown, Leeves & Prayaga 2012). Despite some shortcomings such as this bureaucratic effect, increase in government corruption (Abdih et al. 2008) or a decline in labour supply (Acosta, Lartey & Mandelman 2009), numerous studies have suggested welfare-enhancing benefits from remittances in the receiving countries (Abdih et al. 2008; Acosta, Lartey & Mandelman 2009; Gupta, Pattillo & Wagh 2009).

The World Bank (2006c) data demonstrates that the increase in emigration flows from developing to developed countries has been accompanied by a surge in remittances from migrants to their friends and families overseas. In particular, remittances received by developing countries rose almost threefold from 1995 to 2005, from 58 to 167 billion USD. Similarly, according to the data, remittance growth for this decade outran private capital

flows and official development assistance. The World Bank's data in Figure 4.2 also demonstrates a steady increase in the outward remittances from Australia from 1993 to 2008, with a single small decline registered in 2000 (World Bank 2011).

The comparison of Figures 4.1 and 4.2 reveals that remittances from Australia in general increase with the rise in the number of immigrant arrivals and decrease when immigration to Australia declines. For example, a decline in remittances from 1,055 to 1,053 million USD was observed in 2000 (World Bank 2011), just a few years after the recorded decline in immigration to Australia, which was probably caused by the increase in the waiting period to receive government benefits. Likewise, there was a surge in remittances from Australia starting in 1999, mirroring an upward trend in the number of immigrants starting in the same year. This implies that newly arrived immigrants are the major contributors to these outward transfers.

This increase in the remittance outflow from Australia, however, cannot be explained solely by an increase in the number of immigrants. For example, even though there was a 72 per cent increase in the immigrant intake in Australia from 2000 to 2007 (DIAC 2008), the surge in remittances for the same period exceeded 180 per cent (World Bank 2011). As presented in Figure 4.1, the increase in immigration is not equal among all categories, with the fastest growing group being the Independent Visa category despite tighter entry requirements. The amendments to the points system were supposed to attract qualified and educated immigrants who would not be dependent on the government social security system. Hence, skilled immigrants who arrived in Australia after 1999 are likely to have a higher earning potential than immigrants who arrived earlier. Therefore, a change in the distribution of visa categories and a consequent change in the dominant profile of a recent immigrant could contribute to the increase in remittances from Australia. Thus, the reasons for immigrants' motives to remit, and accordingly the determinants of the remittance outflows from Australia, can also change.

An extensive literature describes the motives for migrants' remittances not only as altruistic but also based on self-interest such as security of inheritance or investment in assets at home (Sinning 2011). The degree of altruism has been evaluated by income effects in the majority of the empirical studies on remittances. However, there is insufficient evidence to suggest a direct proportionate relationship between a unit income change and a unit transfer (Altonji, Hayashi & Kotlikoff 1997). 'Tempered altruism or enlightened self-interest' motives such as repayments of loans or the degree of risk to income, in addition to its size, can also impact on

immigrants' capacity to remit (Sinning 2011). Amuedo-Dorantes and Pozo (2006), in their study of Mexican immigrants in the US, contended that migration for work to cushion home economic fluctuations is one of the rationales for sending remittances. They showed that income risks may increase the amount immigrants remit to their home countries in order to smooth future consumption.

Brown (1997), in addition to using motivational and income-influencing variables, also used variables reflecting demand-side pressure from immigrants' home countries and the length of their absence in the estimation of the remittances of Pacific Islanders living in Australia. According to Brown, it is believed that the longer the duration of the migrant's stay abroad and the fewer dependents left at home, the weaker is the migrant's decision to remit. Brown's results revealed that, in addition to income, self-interest is important for the remittance behaviour of both Western Samoan and Tongan communities, with the former also subjected to financial obligation to the home community. There is also a positive relationship between the remittances of migrants from the Pacific Islands and their having a surviving parent or spouse overseas, but there is no effect from the time spent in Australia.

Similarly, Sinning (2011), in his study of the determinants of savings and remittances of immigrants to Germany, reported a positive influence of having close relatives in a home country on the size of immigrants' remittances. Additionally, an intention to return increases the financial transfers of migrants to their countries of origin, whereas adding a family member to their household in Germany decreases the size of these payments. His estimates also suggested different saving and remitting patterns for migrants from different countries, with migrants from Turkey being more likely than migrants from Italy, Yugoslavia or Greece to save in their home country.

Considering the above, the recent changes in outward remittances from Australia may be caused not only by the change in immigration rates but also by the personal circumstances of immigrants. Hence, this chapter aims to identify the factors that influence the remitting behaviour of immigrants to Australia. Current empirical evidence from other developed countries, such as the US and Germany, reveals a number of remitting motives varying from altruistic to risk-sharing purposes. As argued in the previous chapters, however, these findings might not necessarily be applicable to the Australian immigrant population due to different reasons for migration and different migration policies and sources of migrants. On the other hand, research on the determinants of the remittances of immigrants to Australia has

been applicable mostly to immigrants from specific countries or regions, such as Tonga and Western Samoa, as in the study conducted by Brown (1997). Furthermore, existing studies have often adopted a single approach (as reflected in the Data and Methodology section of this chapter), whereas this study conducts the first comprehensive analysis of remittances using three appropriate models: the two-part model, the Tobit model and the Heckman two-step model.

Another distinctive contribution of this research is that it attempts to examine Australian immigrants' remittance outflows controlling not only for the personal characteristics of immigrants but also for Australian Government policies. Immigrants' ability to remit can be also influenced by the economic and political situations in the remitting country; however, to the best of the author's knowledge, this relationship has not yet been investigated, at least in an Australian setting. Changes in the numbers of visas issued in different visa categories demonstrate the effects of changes in Australian immigration policies. Hence, the category of entry visa can serve as a proxy for the changes in immigration laws. Continents, and not immigrants' former countries of residence, have been used to represent immigrants' origin due to the large number of countries represented and the insufficient number of observations for many of them[23].

## 4.4 Data and methodology

This section is divided into three subsections. First, the LSIA data and variables are discussed; the second subsection presents summary statistics; and the third subsection specifies models for investigating the factors influencing the probability of new immigrants in Australia to remit money overseas as well as the amount of their transfers.

### 4.4.1 Description of data and variables

Observations on the two independent cohorts of immigrants from LSIA were used for this part of the study. As discussed in Chapter 1, LSIA is a longitudinal study of newly arrived immigrants, which is intended to provide data for monitoring and evaluating immigration and settlement policies, programs and services. While the first cohort (LSIA1) was selected by the Department of Immigration and Multicultural and Indigenous Affairs from immigrants

[23] Of the 127 former countries of residence of the first cohort of immigrants arrived in 1993–1995, only 72 countries have more than 30 observations. This number is even lower in the second survey of 1999–2000 arrivals (49 out of 123).

who arrived from September 1993 to August 1995, the second cohort of LSIA (LSIA2) was used by the Department to evaluate the effects of policy changes introduced in 1996 on immigrants arriving from September 1999 to August 2000. Hence, using these datasets, which cover arrivals both before and after the amendments to immigration laws, enabled the effects of the legislative changes to be evaluated. Each individual in LSIA1 was observed three times: first, in March 1994 – February 1996, second, in March 1995 – February 1997, and third, in March 1997 – April 1999 (hereafter referred to as first interview, second interview and third interview respectively). Likewise, two sets of data collected for the second cohort of immigrants in February 2000 – January 2001 and February 2001 – March 2002 were also used in this analysis (hereafter referred to as first interview and second interview respectively).

Remittances in this research are defined as the amounts of money sent to relatives and friends overseas. This is consistent with the only question about remittances asked in all interviews except the first interview in LSIA1, where the question asked about money sent to relatives overseas only. Money sent to friends abroad could be included in the answer to the second question about money sent to business associates or others which was asked in this interview. In order to avoid any misinterpretation and due to the small percentage of immigrants who transferred monies to people other than their relatives[24], only the answers to the first question are considered in the first interview. Likewise, to prevent any confusion between remittances and financial assets sent from Australia, it is assumed that financial assets sent overseas are for investment and other purposes different from providing financial assistance to family or friends. Financial assets in this research include funds, personal effects and capital equipment.

Hence, the variables of interest were the probability that individuals transfer any amounts of money to relatives or friends abroad and the size of these amounts. The first dependent variable was created based on the answer to the question common to all interviews. The question asked if a respondent (or his/her spouse) remitted any amount of money to their relatives overseas since arrival or last interview. This variable is equal to 1 if they provided a positive answer and 0 otherwise.

[24] Only 1% of Primary Applicants in the first interview.

The remitted amount is reflected in three different ways in LSIA :

- In the first two interviews of LSIA1, it is grouped into levels with 1 indicating zero, 2 – an amount up to $8,000, 3 – an amount between $8,001 and $16,000, 4 – an amount in the range of $16,001 to $25,000, 5 – $25,001 to $35,000, 6 – $35,001 to $50,000, and 7 – an amount greater than $50,000.
- In the third interview of LSIA1, the actual amount of remittances is recorded.
- In both interviews in LSIA2, the actual amount is rounded to the nearest thousand.

These different classifications of remittances in LSIA can be an impediment to the panel data estimates using LSIA1 and to the comparison of the results obtained using data from each of the two surveys. As a solution, the actual amount of remittances from the third interview of LSIA1 was grouped into levels to enable panel data estimates for the combined first, second and third interviews data with an ordered dependent variable model. Alternatively, the midpoints of the groupings in each level of remittances recorded during the first and second interview of LSIA1 were combined with the third interview data to enable the application of a linear panel data model. These could then also be compared with the panel data estimates from LSIA2, albeit with the rounded amounts used in the latter. Likewise, for the purpose of comparison, these rounded amounts in LSIA2 were also grouped into levels to allow the application of the ordered dependent variable model and comparison with the similar panel data estimates of LSIA1.

Therefore, three dependent variables were used in the research reported in this chapter:

1. binary variable which is equal to 1 if any money is sent to relatives or friends overseas and 0 otherwise;
2. remitted amount expressed in levels from 1 to 7 with 1 representing zero amount and 7 – higher than $50,000;
3. actual remitted amount (includes midpoints of remittances levels in first and second interviews in LSIA1, and remitted amounts rounded to the nearest thousand in LSIA2).

As suggested by Brown (1997), the variables affecting remittance behaviour can be classified as: demand-side, supply-side, motivational factors and the duration of a migrant’s absence

from the home country. The duration of stay in Australia or absence from the home country is not considered important due to the fact that all surveyed immigrants arrived shortly before the start of each survey. Respondents from the first survey were first interviewed from March 1994 to February 1996, which was about six months since their arrival. Likewise, the second cohort was first surveyed five months after their arrival, during the period February 2000 to January 2001.

The behavioural variables used in the research by Brown (1997) were: individuals' opinion on whether their parents are poor; their intention to return home for both under the age of 55 and retired respondents; whether they expect to inherit assets from their parents overseas; whether they own land or non-land assets in their former countries; whether they received financial assistance for migration from relatives overseas; and the respondents' level of education. Due to the limitations of the coverage of the LSIA survey, only two variables of this kind were included: indications of respondents' intentions to return to their home countries or emigrate from Australia to other countries permanently; and the level of their education before migration. The first variable is expected to have a positive effect on remittances by encouraging savings outside Australia. Similarly, having a post-school education compared with the base case of having no post-school education, if positive and significant, could mean that money sent overseas is used for repayment of a loan taken for education.

Compared to motivational variables, the supply-side factors were represented in a more comprehensive way. Brown (1997) used three supply-side variables: household annual income; assets held by the household; and the number of persons living in the household. Similarly, based on the availability of the LSIA data, the supply-side variables used in this research were: household annual income grouped into levels; the financial assets migrants arrived with, transferred to and transferred from Australia; and the number of household members. Additional variables were: information about age, gender, number of resident children, employment status and marital status; and whether the respondent owns a home, rents or lives rent-free. These variables might have indirect supply-side impacts through their effects on the ability to accumulate funds.

Demand-side variables used by Brown (1997) included: whether a household head has parents or spouse in the country of origin; whether a household head received guests to stay during the preceding 12 months; and whether a household head migrated to Australia via a

third country. Although the questions about staying guests and migration via a third country were not asked during the surveys, fortunately, the LSIA surveys data have information about relatives overseas including children, spouse, parents and siblings. Additional demand-side variables specific to this research included the continent of origin[25], which can also represent the degree of remoteness from the original home community, and the visa category used by the Primary Applicant to enter Australia. The second variable can account for the situation in the migrant's home country and the motives for migration. The information about visa type is also useful for testing the hypothesis about the relationship between remittances and immigration policies. Consistent with other studies (Chiswick & Miller 2004), there are five major visa categories: Family, Humanitarian, Skilled-Independent, Skilled-Sponsored and Skilled-Business. The description of these categories is presented in Table 4.1 and the complete list of variables used is presented in Table C.1 in Appendix C.

### 4.4.2 Descriptive statistics

Only data collected for the 5,192 Primary Applicants for Australian residency (hereafter referred to as Primary Applicants) in LSIA1 and the 3,118 Primary Applicants in LSIA2 were used due to the limited number of questions addressed to other respondents. The definition used in LSIA describes Primary Applicants as persons upon whom the approval to immigrate to Australia was based. Their basic characteristics are described in Table 4.3.

The average age of new migrants in both groups is 36 to 37, with the majority being in a committed relationship. There are slightly more men than women, and less than half the respondents are employed. Although there are three to four people on average in each household, not all households have resident children. They rely on the financial assets they arrived with or transferred to Australia after migration with their average annual income being less than $50,000. More than a third of Primary Applicants have a higher education but the second biggest group has no post-school qualification. Due to the fact that they are new to the country, in more than half the cases, Primary Applicants rent accommodation. Almost half the sample is represented by immigrants from Asia, followed by just above 30 per cent from Europe. Most of the immigrants have relatives overseas but only 2 per cent have left their spouses and 10–11 per cent have left children in their home countries.

[25] Based on the former country of residence of Primary Applicant. Using continents based on the countries of birth provided similar results.

Despite there being only five to six years difference between the arrivals of these two cohorts, there are significant variations in their responses. In the second survey, there are more female respondents, a higher percentage of married individuals and a higher employment rate for participants. They are also financially better off with a higher household income and a greater value of assets arrived with and transferred to Australia post-migration. The average values of remitted amounts (around $2000) and financial assets (around $200) transferred out of Australia do not differ between the two cohorts. Considering the level of inflation between the two periods, the real values of these outward transfers carried out by later arrivals could even be lower than for the first cohort. Reflecting this trend, the percentage of those who remit was reduced from 19 to 13 per cent in the second cohort. Despite that, only 20 per cent of immigrants in this cohort could afford their own housing compared to 22 per cent of those in the first group. There are slightly different patterns of immigrants in both groups, with an increased percentage of immigrants from Pacific Island countries from 2 to 4 per cent accompanied by a decrease from 5 to 2 per cent in the percentage of migrants from South America.

## Table 4.3 Characteristics of Primary Applicants for Australian residency, LSIA1 and LSIA2 (combined data)

| Characteristics | 1993-1995 arrivals | 1999-2000 arrivals |
|---|---|---|
| Age | 35.86 | 36.83*** |
| | (11.58) | (13.11) |
| % male | 57.19 | 53.95*** |
| % married (or de-facto) | 61.65 | 63.37** |
| % employed | 41.42 | 44.93*** |
| Number of children | 0.74 | 0.67*** |
| | (1.05) | (1.06) |
| Number of residents in household | 3.50 | 3.56** |
| | (1.72) | (1.75) |
| % planning to leave Australia permanently | 4.79 | 1.53*** |
| Median annual household income category | $25,001-$35,000 | $35,001-$50,000*** |
| Financial assets arrived with($) | 29,945 | 40,432*** |
| | (109,649) | (135,449) |
| Financial assets transferred to AUS ($) | 9,828 | 16,095*** |
| | (90,013) | (141,440) |
| Financial assets transferred from AUS ($) | 192 | 263 |
| | (3,676) | (4,317) |
| **Level of highest education achieved (%)** | | |
| No post-school qualification | 33.46 | 35.41*** |
| Bachelor degree or higher | 38.54 | 38.39 |
| Other post-school qualification | 28.00 | 26.20*** |
| **Housing arrangements (%)** | | |
| Own /pay mortgage | 22.16 | 19.79*** |
| Rent | 64.50 | 59.14*** |
| Live rent free | 13.33 | 21.07*** |
| **Continent of origin (%):** | | |
| Asia | 48.00 | 47.08 |
| Africa | 8.96 | 9.17 |
| North America | 5.29 | 5.16 |
| South America | 4.71 | 2.47*** |
| Europe | 30.76 | 32.26** |
| Oceania (excl. Australia) [a] | 2.29 | 3.85*** |
| **% of those who remit** | **19.10** | **13.00*** ** |
| **Amount of remittances ($) for those who remit[b]** | **1,999** | **2,008** |
| | **(3,721)** | **(11,908)** |
| **Visa category (%)** | | |
| Skilled - Independent | 16.41 | 12.16*** |
| Skilled - Sponsored | 14.98 | 09.20*** |
| Skilled - Business | 10.32 | 11.10* |
| Humanitarian | 16.01 | 17.90*** |
| Family | 42.28 | 49.65*** |
| **Have relatives overseas (%)** | | |
| Spouse | 2.32 | 2.08 |
| Children | 10.19 | 11.45*** |
| Parents | 81.44 | 78.22*** |
| Brothers and sisters | 89.04 | 85.82*** |
| Number of individuals | 15,576 | 6,236 |

**Notes:** Mean values are reported unless otherwise stated. Standard deviations are in parenthesis. The sample is limited to the Australian immigrants who were Primary Applicants for Australian Residency and who are aged 15 or older. *** indicates a significant difference between cohorts at at least the 1% level, ** at at least the 5 % level 0.05, * at at least the 10% level, when mean-comparison t-test is used.

[a] Includes Primary Applicants for Australian visas who were born in Australia but whose former country of residence is different from Australia.

[b] Due to a lack of data on actual remitted amount during 1st and 2nd interview in LSIA2, it is calculated using midpoints of recorded remittances levels.

Likewise, possibly following the Review of the Independent and Skilled-Australian Linked Categories in 1999 by the Department of Immigration and Multicultural Affairs (Hawthorne 2005), there was a change in the distribution of different visa groups. The goal of this Review was to evaluate the effectiveness of the points test through modifications such as the rigorous expansion of pre-migration English language testing and mandatory qualification assessment. Hence, it is likely that at the start of the reform, the number of Primary Applicants from the LSIA under the Skilled-Independent and Skilled-Sponsored categories, which are subject to points testing, decreased, unlike Primary Applicants from the Family, Business and Humanitarian visa streams, whose numbers even increased

Following Chiswick and Miller (2004) and due to the Skilled-Independent Visa category being the biggest group among the two points-tested categories, this category was used as a benchmark group for visa categories in the estimations that follow. Since under points testing, additional points are awarded for Australian sponsorship for the Skilled-Sponsored category only, applicants for Skilled-Independent Visas are subjected to tighter entry requirements and therefore, a higher proportion of change in this category could be attributed to the changes in the immigration laws.

The next sub-section presents the models used for the analysis of remittances. The analysis of factors affecting the amounts remitted by Australian immigrants was based on two sequential and possibly interrelated decisions faced by individuals: first, whether or not to send money overseas and second, how much money to send. There are different approaches to analysing these decisions but the most frequently used are the two-part model, the Tobit model and the Heckman two-step model.

### 4.4.3 Models

Three different models were considered for the estimation of the remitting behaviour of Australian immigrants. All models were estimated using STATA version 11.

The first model was based on the assumption that the amount that immigrants decide to remit is independent of their decision whether to send any money overseas or not. In this case, immigrants' probability of remitting could be estimated by using a probit model, and the remitted amount could be estimated by running either an ordered dependent model or a linear panel model only for those individuals who participated in the remitting process.

In the first stage, the dependent variable was the binary variable which is equal to 1 if a respondent sent any money overseas since migration to Australia or last survey, and 0 otherwise. Hence, the probability that an individual transfers money overseas was described by the following probit model:

$$\Pr(Remit_{it} = 1 | X_i, \beta) = \Pr(\alpha + \beta X_{it} + \varepsilon_{it} \geq 0) = \Phi(\alpha + \beta X_{it}) \quad , \qquad (4.1)$$

where $t$=1,..,3 for LSIA1 and $t$=1,2 for LSIA2;

in addition, $\Phi(\varepsilon_{it})$ is the probit function, which is the standard normal cumulative distribution function; $Remit_{it}$ is the money sent overseas by an immigrant $i$ which is equal to 1 if Primary Applicant or his/her partner sent any money to relatives or friends overseas, and 0 otherwise; $X_{it}$ includes individual controls such as age, income and education as well as respondents' type of visa used to migrate to Australia.

In the second stage, an ordered probit model was applied to the remittances grouped into levels and a linear panel data model was applied to the actual amount of remittances. The ordered dependent variable, computed as described earlier, was the amount of remittances measured on a scale from 1 to 7, with 1 representing no payments and 7 more than $50,000 sent overseas. These levels of remitted amount were analysed by the ordered probit model with normal distribution:

$$\Pr(Level_{it} = M \mid X_{it}, \beta_1, \gamma) = 1 - \Phi(\gamma_M - \beta_1 X_{ti}) \ , \qquad (4.2)$$

where $Level_{it}$ represents levels of remitted amount recorded by an immigrant $i$ or his/her partner in period $t$ with $M$=1,...,7 and $t$=1,..,3 for LSIA1 and $t$=1,2 for LSIA2; $\gamma_M$ are the threshold amounts that reflect the range for each level of remitted amounts $(\gamma_1 = 0, \gamma_2 = \$8{,}000, ..., \gamma_6 = \$50{,}000)$; $X_{it}$, as before, includes individual controls.

As discussed, a remitted amount can be also expressed by a continuous function. A linear panel data model could be applied to the subsample consisting of remitting individuals, with the same independent variables as in the first and second model:

$$Amount_{it} = \alpha_i + \beta X_{it} + \varepsilon_{it} \ , \qquad (4.3)$$

where $t$=1,..,3 for LSIA1 and $t$=1,2 for LSIA2,

and $Amount_{it}$ is the amount of money sent overseas by an immigrant *i* or his/her partner in period *t* and the independent variables are the same as above.

Since the independent variables might not account for all personal characteristics, a fixed effects estimator was used to remove unobserved effects as part of linear panel data model estimation. However, time-constant variables such as gender, education or continent of former country of residence were then removed with the unobserved effects. Hence, the random effects method was also applied under the assumption that unobserved effects are not correlated with the explanatory variables (Wooldridge 2002a).

This approach of running a separate probit or logit model for the whole sample followed by a regression for a reduced subsample is referred to in the literature as the two-part model (Manning, Duan & Rogers 1987). Even though this was considered the most straightforward approach in a number of studies (Duan et al. 1983; Manning, Duan & Rogers 1987; Vaara & Matero 2011), there are some concerns about its application. These concerns could be justified because the dependent variable in the second part, which, in this case, is the amount of remittances, contains a large number of item non-responses and is only available for a subset of the sample. This is a sample selection problem sometimes called incidental truncation, as suggested by Wooldridge (2002b), because the remitted amount is missing as a result of the outcome binary variable representing the probability to remit by immigrants. Thus, whether or not the remitted amount is observed depends on the individual's decision to remit. Hence, using a linear regression model in this context, as argued by Brown (1997), leads to biased and inconsistent estimates. The effect of immigrants' socio-demographic characteristics on their remitted amount might be underestimated since the subsample of those who remit is underrepresentative of the immigrant population.

As a solution to the sample selection problem, the literature has suggested the application of sample selection models which can be broadly classified as the Tobit model and the Heckman selection model. In the standard Tobit model, the decision to remit and the decision of how much to remit are generated through the same mechanism using data on both remitting and non-remitting migrants. Hence, as an alternative to the two-part model, some researchers (Amuedo-Dorantes & Pozo 2006; Brown 1997) have applied the Tobit model to the assessment of both the probability of a migrant being a remitter and the remitted amount, which is described as below:

$$Amount_{it}^{*} = \alpha_i + \beta Xit + \varepsilon_{it},$$

where

$$Amount_{it} = \begin{cases} Amount_{it}^{*}, \text{if } \alpha_i + \beta\ X_{it} + \varepsilon_{it} > 0 \\ 0, \text{otherwise} \end{cases}, \qquad (4.4)$$

and $t$=1,..,3 for LSIA1 and $t$=1,2 for LSIA2.

As before, $Amount_{it}$ is the amount of money sent overseas by an immigrant $i$ or his/her partner in period $t$; $X_{it}$, includes individual controls; and error term $\varepsilon_{it}$ is assumed to be a normal random variable with mean zero and variance $\sigma^2$.

Brown (1997) asserted that in the Tobit model each regressor has the same effect on the probability of a migrant being a remitter and on the level of remittances, but this might not be a realistic assumption. As argued by Vaara and Matero (2011), there might be a problem with the Tobit approach especially when the actual effects of independent variables on probability to remit and the actual amount are of the opposite sign. For example, the stochastic process that represents the individual decision to remit may greatly differ from the one that describes the decision about how much to transfer (Sinning 2011). Similarly, Vaara and Matero (2011) presented another reason to reject the Tobit model, asserting that this model is appropriate only if the main dependent variable – in this research the amount of remittances – contains missing or negative values censored to zero.

Another selection model, the Heckman model, has also been widely employed in the research (Amuedo-Dorantes & Pozo 2006; Jang 2006; Vaara & Matero 2011). Although it can be estimated by a two-step procedure or Maximum Likelihood Estimation (MLE), the Heckman two-step procedure was applied in this study. The primary reason was that, despite MLE being more efficient under stronger assumptions than the more general two-step procedure, it is less robust and may have problems with convergence (Wooldridge 2002b). Unlike the Tobit model, the Heckman two-step procedure, according to Vaara and Matero (2011), has one set of variables for selection equation and a second set for the outcome equation. As Vaara and Matero also argued, the Heckman two-step model presumes two interdependent decisions, unlike the Tobit model with a single decision procedure or the two-part model with two independent decisions.

Following other studies (Amuedo-Dorantes & Pozo 2006; Jang 2006; Vaara & Matero 2011), the Heckman two-step estimates were obtained by applying first a probit model (4.1) and subsequently a linear panel data model (4.3). A slightly different set of covariates was used at the second step, excluding at least one independent variable used in the first step but including a sample correction bias term. This term is known as the Inverse Mills ratio $\lambda$ , or as the hazard rate in reliability theory (Heckman 1976), and is commonly applied to correct the selection bias which can be viewed as an omitted variable problem in the selected sample (Wooldridge 2002b). People who choose to remit may differ in some ways from those who do not and, if the variable controlling for these factors is omitted at the selection stage, it could produce biased estimates for the remitted amount. The Inverse Mills ratio controls for these unmeasured characteristics and, according to Wooldridge (2002b), it is equal to the probability density function over the cumulative distribution function of a distribution obtained after running the probit model:

$$\hat{\lambda} = \frac{\phi(X_{it}\hat{\beta})}{\Phi(X_{it}\hat{\beta})} \quad . \tag{4.5}$$

At the outcome stage, this ratio was included as an independent variable in a linear regression described by model (4.3). Because this factor reflects the effect of all unmeasured characteristics related to an immigrant's decision to remit, the coefficient on the Mills ratio catches the part of this effect related to the remitted amount.

A necessary condition for applying the Heckman procedure, as pointed out by Sartori (2003), is that there should be at least one independent variable which influences an immigrant's decision to remit but not the size of these remittances. The absence of such a variable may cause problems of multicollinearity and dubious estimates. It is assumed that the amount of the remittances is more dependent on the supply-side factors, such as income and being employed, or motivational factors, such as a respondent's intention to return to their home country. Hence, information about relatives left overseas, which represents the demand-side factor, was included only in the estimation of the probability of remitting but not in the remitted amount.

If the assumption is proved false, however, this can lead to an incorrect exclusion choice of variables at the outcome stage. Likewise, a reliance on normality and homoskedasticity in latent variables can lead to the incorrect acceptance of selection models. Therefore, the

conclusion drawn from the Heckman model estimates is sensitive to the model specification and to the choice of independent variables (Vaara & Matero 2011). Further undermining the appropriateness of the Heckman model, Sartori (2003) argued that the 'extra' explanatory factor that affects the selection equation, but not outcome equation, often does not exist. There is no single solution to this debate on the most appropriate model, and the choice is highly case specific. Hence, similarly to the usage by Vaara and Matero (2011), all three approaches are presented and compared in the following Empirical Results section. All estimates in this section are applied to the panel data from LSIA1 and LSIA2 separately and the results are then compared with each other. The Likelihood Ratio Chi-Square statistic or Wald Chi-Square statisic was used to test whether at least one of the regression coefficients in the model was not equal to zero and all models passed one or the other test.

## 4.5 Empirical results

The findings of the analysis carried out in this chapter are grouped by the applied model and presented below.

### 4.5.1 Two-part model

The factors affecting remittances sent by recent immigrants to their home countries were first investigated by using the two-part model. The approach began with the analysis of the likelihood that recent immigrants remit money overseas by applying probit model (4.1) to the panel data from LSIA1 and LSIA2.

As can be seen in Table 4.4, in both cohorts a higher income increases, but a higher value of financial assets arrived with in Australia decreases, the probability of remitting by these immigrants. While the first effect is expected, the negative effect from bringing more financial assets to Australia can indicate that the owners of these assets are wealthy individuals whose families in their home countries need less financial assistance. The probability of remitting increases for young individuals as they grow older with the turning point at the age of 32 in LSIA1 and 26 in LSIA2, when it starts to decrease. Obtaining a post-school qualification before migration does not imply a higher probability of remitting, as expected. On the contrary, it has a negative effect on the probability of immigrants sending money overseas, possibly also reflecting that families of tertiary-educated individuals have a higher level of wealth in their home countries. Not surprisingly, being employed means a higher chance of an individual remitting some money to their home country. Living rent-free,

on the contrary, implies a lower likelihood of these transfers, which could be a sign of an individual's poor financial situation with an inability to buy a house or pay rent. Representatives of both cohorts are more likely to remit if they have children overseas.

**Table 4.4 Results of the probit model predicting determinants of immigrants' decision to remit money overseas, LSIA1 and LSIA2 (panel data)**

| Variables | 1993–1995 arrivals | 1999–2000 arrivals | Variables | 1993–1995 arrivals | 1999–2000 arrivals |
|---|---|---|---|---|---|
| | | | **Housing arrangements (Own/Pay mortgage=base case):** | | |
| Income | 0.116*** | 0.0566** | Rent | -0.115** | -0.0514 |
| | (0.0176) | (0.0284) | | (0.0527) | (0.0941) |
| Fin. assets arrived with | -0.0152*** | -0.0115** | Rent free | -0.247*** | -0.292** |
| | (0.00338) | (0.00449) | | (0.0944) | (0.149) |
| Fin. assets transferred to AUS | -0.0155*** | -0.00681 | **Continents (Oceania (excl. Australia)=base case):** | | |
| | (0.00513) | (0.00567) | Asia | 0.115* | -0.288* |
| Fin. assets transferred from AUS | 0.00924 | 0.0750** | | (0.0602) | (0.168) |
| | (0.0262) | (0.0337) | Africa | -0.212** | -0.266 |
| Age | 0.0256* | 0.0353 | | (0.0999) | (0.197) |
| | (0.0147) | (0.0233) | North America | -0.261** | -1.076*** |
| Age squared | -0.000416** | -0.000667** | | (0.125) | (0.245) |
| | (0.000175) | (0.000282) | South America | -0.0864 | -0.0472 |
| Gender (1 if male) | 0.0554 | -0.0475 | | (0.131) | (0.261) |
| | (0.0528) | (0.0816) | Europe | -0.451*** | -0.771*** |
| No. of children | 0.0962*** | 0.0277 | | (0.0696) | (0.180) |
| | (0.0292) | (0.0480) | **Visa Category (Skilled - Independent=base case)** | | |
| No. of persons | -0.0636*** | -0.0158 | | | |
| | (0.0202) | (0.0318) | Skilled - Sponsored | -0.0339 | 0.111 |
| Plan to leave | 0.138 | 0.306 | | (0.0822) | (0.151) |
| | (0.0893) | (0.251) | Skilled - Business | -0.345*** | -0.340** |
| **Marital status (Married=base case):** | | | | (0.101) | (0.170) |
| Previously married | 0.0328 | -0.177 | Humanitarian | 0.638*** | 0.546*** |
| | (0.0854) | (0.154) | | (0.0893) | (0.161) |
| Never been married | -0.143** | -0.152 | Family | -0.0266 | 0.139 |
| | (0.0696) | (0.111) | | (0.0787) | (0.131) |
| **Level of highest education (No post-school qualification=base case):** | | | **Relatives overseas:** | | |
| Bachelor degree or higher | -0.140** | -0.158 | Spouse | 0.134 | -0.129 |
| | (0.0648) | (0.101) | | (0.137) | (0.269) |
| Other post-school qualification | -0.150** | -0.213** | Children | 0.543*** | 0.642*** |
| | (0.0647) | (0.100) | | (0.0826) | (0.143) |
| | | | Parents | 0.236*** | 0.0255 |
| **Employment status (Employed=base case):** | | | | (0.0699) | (0.125) |
| Unemployed | -0.673*** | -0.756*** | Brothers and sisters | 0.171** | 0.0515 |
| | (0.0705) | (0.151) | | (0.0819) | (0.135) |
| Not in labour force | -0.500*** | -0.711*** | Constant | -1.750*** | -1.425*** |
| | (0.0613) | (0.105) | | (0.342) | (0.549) |
| | | | Observations | 10302 | 4353 |
| | | | Log likelihood | -4520 | -1534 |

**Notes:** The dependent variable is probability of remitting. In addition to the coefficients reported above, the regressions also include Australian state of residence controls, which are not reported due to low significance. The sample is limited to Primary Applicants for Australian Residency aged 15 or older who have non-missing data on former country of residence. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

Migrants from North America and Europe have a lower propensity to remit than the base case of Oceania. At the same time, the probability of remitting by immigrants from the base group is not much different from that of immigrants from South America. Since Europe is mostly represented by immigrants from developed countries such as United Kingdom, Greece, Italy and Germany, and North American immigrants mostly come from the US and Canada, this suggests that distance does not play a role in decisions to remit. These decisions are affected rather by the level of prosperity of immigrants' home countries which, in turn, influences their reason for migration (most immigrants from Europe and North America migrate for family unification or as skilled migrants). This is supported in LSIA1 by the higher remitting probability of Asian immigrants than immigrants from Oceania. The negative effect of originating from Asia in the second cohort could be attributed to the higher percentage of immigrants from China, the main source of Skilled-Independent migrants from Asia (17 per cent in LSIA2). The lower remitting probability of African immigrants compared to the base group could be due to the dominance of migrants from South Africa (around 40 per cent in both cohorts) who migrated only under Skilled and Family categories. However, in the second cohort this negative effect was counterbalanced by the increase in the number of refugees from 24 to 36 per cent of the overall intake from Africa.

Cohort differences are reflected in the variation between their coefficients. For example, the negative effect of having financial assets transferred to Australia is evident only for the first cohort and the positive effect of having financial assets transferred from Australia is evident only for the second cohort. The negative effect of having an additional adult in the household (contrasting with the positive effect of an additional child) is evident only for the first cohort. Likewise, being single without any previous relationships, having a higher degree and paying rent compared to the benchmark cases means a lower likelihood to remit for Primary Applicants from the first cohort only. The existence of a positive effect of having parents, brothers or sisters overseas in the first cohort, but not in the second, could be due a higher percentage of migrants who have parents, brothers or sisters overseas in the former group.

Similar visa coefficients for the two cohorts reveal that immigration policies in the late 1990s did not greatly affect immigrants' probability to remit. For example, in both cohorts, Business Visa holders are less likely, and those who arrived under Humanitarian programs are more likely, to send some money overseas compared to the benchmark group of Independent Visa holders. This could be attributed to the individuals under Business Visa having higher skills and accordingly better financial situations of their families in the home country compared to

the applicants for the Independent Visa. In contrast, the refugee status of migrants who were forced to leave their home countries presumes a higher level of financial difficulty than for those who consciously applied for Australian residency based on their abilities and skills.

The next stage of the analysis involved an assessment of the amount remitted by the Primary Applicants. As mentioned before, this could be done in two ways: by using the ordered probit model (4.2) or by applying the linear panel data model (4.3) depending on the description of the transferred amount. Although originally remittances in various interviews in LSIA1 and LSIA2 were described either in actual amounts or in levels, they were either grouped into levels or recorded as the midpoints of the groupings to enable the panel data estimates and the comparison between the two cohorts.

There are some similarities in the factors affecting the remitted amount between the two cohorts, as can be seen from Table 4.5. For example, in both cohorts being employed and having a higher income are associated with a higher level of remitted amount. These factors are also positively associated with the probability of remitting by Australian immigrants, as discussed earlier. Contrary to the previous estimates though, having a higher value of financial assets, either brought when migrating or subsequently sent from Australia, is associated with higher amounts remitted by immigrants from LSIA1 and LSIA2. This suggests that those respondents who remit already have sufficient liquid assets, and the higher value of these assets allows them to conduct financial transactions on a greater scale. Distance does not influence the size of remittances, and Asian migrants who remit also send more money than immigrants from the Pacific Islands. A longer stay in Australia, on the other hand, is positively associated with the amounts remitted by immigrants in both cohorts, probably owing to their initial settling-in expenses and unclear employment prospects in the beginning. Having children overseas means not only a higher likelihood of remitting but also transactions of a higher value. This is not the case for having other relatives abroad.

At the same time, these estimates show significant differences between cohorts. For example, immigrants from South America in the later survey, unlike in the first survey, remit higher amounts than the base category of immigrants from the Pacific Islands. Likewise, immigrants from North America transfer higher amounts than immigrants from the Pacific Islands, but only in the second cohort. On the other hand, there are a number of parameters, such as gender, number of household members, marital status and paying rent as opposed to owing a house, which affect the remitted amount by immigrants from the first cohort but not from the

second. In contrast with the second survey, gender plays a significant role in the decision about how much to remit in LSIA1, with male Primary Applicants remitting higher amounts than their female counterparts. Similarly, a higher number of household members is associated with a lower amount of financial help to relatives and friends of Primary Applicants from LSIA1, but not from LSIA2. Even though single applicants from the first cohort who have never been married have a lower probability of sending some money overseas, they send higher amounts than married individuals. Likewise, the first-cohort individuals with post-school qualifications obtained before arrival in Australia who transfer money overseas send more than their less educated counterparts, reflecting a lower risk of redundancy and higher earning potential. Similarly, living rent free compared to owing a house by immigrants from the first cohort allows them to remit higher amounts, despite being negatively correlated with the likelihood of their remitting overseas.

Respondents under Skilled-Sponsored, Humanitarian and Family Visas in both surveys send less than the benchmark group of Independent Visa holders. Indeed, Humanitarian Visa holders, who are more likely to remit than Independent Visa holders, have fewer qualifications and lower chances of finding a secure job than skilled migrants. Likewise, those who migrated to reunite with their families were not assessed based on their employability and hence might not have the skills required in the Australian labour market. Applicants for a Skilled Visa who had an Australian family member sponsoring them needed lower point scores, allowing individuals less qualified than independent applicants to pass the test.

Compared to Independent Visa holders in the first cohort**,** only respondents in the Business Visa category send higher amounts, even though they are less likely to remit. The fact that this is not applicable to the second cohort could either be attributable to cohort differences or could reflect the change in the financial situation of the Skilled-Independent group due to the amendments to the points test. The higher requirements for a pass mark narrow the selection of applicants to more qualified individuals who are comparable in their skills with Business Visa holders and who could potentially earn a similar income.

**Table 4.5 Results of the ordered probit model predicting factors affecting the amounts immigrants remit overseas, LSIA1 and LSIA2 (panel data)**

| Variables | 1993-1995 arrivals | 1999-2000 arrivals | | 1993-1995 arrivals | 1999-2000 arrivals |
|---|---|---|---|---|---|
| | | | **Continents (Oceania (excl. Australia)=base case):** | | |
| Income | 0.131*** | 0.138** | Asia | 0.121* | 0.616** |
| | (0.0258) | (0.0577) | | (0.0730) | (0.265) |
| Fin. assets arrived with | 0.00768* | 0.0144** | Africa | -0.0294 | 0.463 |
| | (0.00378) | (0.00673) | | (0.129) | (0.320) |
| Fin. assets transferred to | 0.0216** | 0.0123 | North America | -0.254 | 0.789* |
| | (0.00736) | (0.00929) | | (0.168) | (0.411) |
| Fin. assets transferred from | 0.592*** | 1.121*** | South America | -0.152 | 1.147*** |
| | (0.101) | (0.167) | | (0.177) | (0.389) |
| Age | -0.0248 | 0.0356 | Europe | -0.109 | 0.396 |
| | (0.0225) | (0.0455) | | (0.0906) | (0.301) |
| Age squared | 0.000329 | -0.000464 | **Visa Category (Skilled-Independent=base case):** | | |
| | (0.000277 | (0.000572) | | | |
| Gender (1 if male) | 0.220*** | 0.0895 | Skilled - Sponsored | -0.344*** | -0.473** |
| | (0.0697) | (0.146) | | (0.0980) | (0.227) |
| No. of children | -0.00548 | -0.0843 | Skilled - Business | 0.208* | 0.294 |
| | (0.0400) | (0.0892) | | (0.121) | (0.253) |
| No. of persons | -0.0642** | -0.0330 | Humanitarian | -0.216** | -0.899*** |
| | (0.0287) | (0.0536) | | (0.104) | (0.281) |
| Plan to leave | 0.0708 | 0.581 | Family | -0.218** | -0.601*** |
| | (0.124) | (0.382) | | (0.0975) | (0.219) |
| **Marital status (Married=base case):** | | | **Relatives overseas:** | | |
| Previously married | 0.0372 | 0.394 | Spouse | 0.247 | -0.154 |
| | (0.119) | (0.271) | | (0.169) | (0.508) |
| Never been married | 0.287*** | 0.291 | Children | 0.380*** | 0.680*** |
| | (0.0902) | (0.185) | | (0.105) | (0.225) |
| **Level of highest education** | | | Parents | 0.133 | -0.111 |
| **(No post-school qualification=base case):** | | | | | |
| Bachelor degree or higher | 0.156* | 0.0332 | | (0.101) | (0.233) |
| | (0.0836) | (0.180) | Brothers and sisters | 0.203 | 0.119 |
| Other post-school | 0.310*** | -0.113 | | (0.124) | (0.261) |
| qualification | (0.0827) | (0.183) | | | |
| **Employment status (Employed=base case):** | | | Year1=1 for 2nd interview | 0.369*** | 0.427*** |
| Unemployed | -0.306*** | -0.528 | | (0.102) | (0.145) |
| | (0.116) | (0.353) | Year2=1 for 3rd interview | 0.869*** | |
| Not in labour force | -0.199** | -0.520*** | | (0.104) | |
| | (0.0888) | (0.199) | | | |
| **Housing arrangements(Own/Pay mortgage=base case):** | | | Log likelihood | -1556 | -324.3 |
| Rent | 0.0172 | 0.0198 | Pseudo R -squared | 0.133 | 0.252 |
| | (0.0734) | (0.173) | | | |
| Rent free | 0.267* | 0.124 | | | |
| | (0.138) | (0.283) | Observations | 2009 | 580 |

**Notes:** The dependent variable is amount of money sent overseas in levels. In addition to the coefficients reported above, the regressions also include Australian state of residence controls, which are not reported due to low significance. The sample is limited to Primary Applicants for Australian Residency aged 15 or older who have non-missing data on former country of residence. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

Another way to estimate the second stage of the two-part model would be to apply model (4.3) to the actual amount of remittances. As discussed, both random and fixed effects estimators were applied to the panel datasets from LSIA1 and LSIA2. Due to their time-

constant nature, however, most of the variables including those crucial for this research, such as categories of arrival visas, were dropped when the fixed effects panel model was applied, as demonstrated in Table 4.6. Hence, only the random effects estimates are considered and discussed hereafter[26].

Table 4.6 reveals fewer significant determinants than Table 4.5. For example, only the value of financial assets transferred from Australia, being male, being never married compared to being in a committed relationship, and migrating from South America compared to migrating from the neighbouring Pacific countries have positive effects on the remitted amount in the second cohort. There is no effect from gender, marital status or originating from South America on the remitted amounts by immigrants from LSIA1, but these estimates have a few more significant parameters than those carried out using LSIA2. They include a higher income and having financial assets in Australia, both of which promote greater remittances. Additionally, having a post-school qualification below bachelor degree as opposed to having no qualifications increases the remitted amount by immigrants from the first cohort. Whereas being jobless compared to being employed means that they remit lower amounts. Age also has a negative effect for the first-cohort individuals aged under 33. Similarly, the negative effect of being sponsored by an Australian family member and the positive effect of having a spouse overseas on the size of remittances are evident only for immigrants in the first cohort.

[26] The signs and values of estimated coefficients available for fixed effects are consistent with those of the random effects model. This suggests that the unobserved effects problem may not be present.

**Table 4.6 Results of the linear panel model predicting factors affecting the amounts immigrants remit overseas, LSIA1 and LSIA2**

| Variables | 1993-1995 arrivals | | 1999-2000 arrivals | |
|---|---|---|---|---|
| | **Random Effects** | **Fixed Effects** | **Random Effects** | **Fixed Effects** |
| Income | 0.0210*** | 0.0230 | 0.0134 | 0.0148 |
| | (0.00731) | (0.0150) | (0.0167) | (0.0183) |
| Fin. assets arrived with | 0.00648*** | - | 0.0113 | - |
| | (0.00140) | - | (0.00788) | - |
| Fin. assets transferred to AUS | 0.0201*** | 0.0414*** | -0.0122 | -0.0500** |
| | (0.00236) | (0.00469) | (0.00977) | (0.0195) |
| Fi.n assets transferred from AUS | 0.242*** | 0.0934* | 0.658*** | 0.608*** |
| | (0.0333) | (0.0521) | (0.0579) | (0.0739) |
| Age | -0.00956 | 0.00886 | -0.0107 | -0.186** |
| | (0.00662) | (0.0439) | (0.0368) | (0.0878) |
| Age squared | 0.000146* | 0.000664 | 0.000285 | 0.00305** |
| | (0.000082) | (0.000591) | (0.000469) | (0.00131) |
| Gender | 0.0144 | - | 0.273* | - |
| | (0.0212) | - | (0.141) | - |
| No. of children | 0.00509 | 0.00357 | 0.0121 | 0.0605 |
| | (0.0115) | (0.0326) | (0.0346) | (0.0409) |
| No. of persons | -0.0121 | -0.0149 | -0.0237 | -0.0358** |
| | (0.00823) | (0.0184) | (0.0157) | (0.0165) |
| Plan to leave | -0.0115 | -0.000535 | 0.00671 | 0.0582 |
| | (0.0356) | (0.0697) | (0.0838) | (0.0913) |
| **Marital status (Married=base case):** | | | | |
| Previously married | 0.0225 | 0.0347 | -0.0414 | -0.0544 |
| | (0.0350) | (0.104) | (0.0784) | (0.0819) |
| Never been married | 0.0399 | 0.00631 | -0.142* | -0.213** |
| | (0.0275) | (0.0697) | (0.0847) | (0.0937) |
| **Level of highest education (No post-school qualification=base case):** | | | | |
| Bachelor degree or higher | 0.0232 | - | 0.170 | - |
| | (0.0250) | - | (0.176) | - |
| Other post-school | 0.0712*** | - | -0.0223 | - |
| qualification | (0.0250) | - | (0.179) | - |
| **Employment status (Employed=base case):** | | | | |
| Unemployed | -0.0687** | -0.00145 | 0.0274 | 0.0319 |
| | (0.0303) | (0.0552) | (0.0634) | (0.0652) |
| Not in labour force | -0.0386 | -0.0223 | -0.0387 | -0.0204 |
| | (0.0247) | (0.0500) | (0.0496) | (0.0536) |
| **Housing arrangements (Own/Pay mortgage=base case):** | | | | |
| Rent | -0.0507** | -0.0270 | -0.0275 | -0.00936 |
| | (0.0212) | (0.0473) | (0.0694) | (0.0800) |
| Rent free | -0.0380 | 0.0563 | 0.0277 | 0.0557 |
| | (0.0397) | (0.0736) | (0.0883) | (0.102) |

(continued on next page)

**Table 4.6 (continued)**

| Variables | 1993-1995 arrivals | | 1999-2000 arrivals | |
|---|---|---|---|---|
| | **Random Effects** | **Fixed Effects** | **Random Effects** | **Fixed Effects** |
| **Continents (Oceania (excl. Australia)=base case):** | | | | |
| Asia | 0.0305 | - | 0.0622 | - |
| | (0.0225) | - | (0.258) | - |
| Africa | -0.00455 | - | -0.0234 | - |
| | (0.0393) | - | (0.321) | - |
| North America | -0.0631 | - | 0.0808 | - |
| | (0.0501) | - | (0.424) | - |
| South America | -0.0206 | - | 1.521*** | - |
| | (0.0510) | - | (0.411) | - |
| Europe | -0.0141 | - | 0.00551 | - |
| | (0.0277) | - | (0.288) | - |
| **Visa Category (Skilled-Independent=base case):** | | | | |
| Skilled - Sponsored | -0.0864*** | - | -0.104 | - |
| | (0.0317) | - | (0.259) | - |
| Skilled - Business | 0.0631 | - | -0.0197 | - |
| | (0.0412) | - | (0.315) | - |
| Humanitarian | -0.0215 | - | -0.133 | - |
| | (0.0326) | - | (0.258) | - |
| Family | -0.0457 | - | 0.00593 | - |
| | (0.0312) | - | (0.229) | - |
| **Relatives overseas:** | | | | |
| Spouse | 0.156*** | 0.0727 | 0.00339 | - |
| | (0.0498) | (0.107) | (0.462) | - |
| Children | 0.0373 | -0.0261 | -0.165 | - |
| | (0.0314) | (0.0880) | (0.233) | - |
| Parents | 0.0164 | 0.0327 | 0.159 | - |
| | (0.0289) | (0.0677) | (0.230) | - |
| Brothers and sisters | 0.0274 | -0.0641 | -0.142 | - |
| | (0.0355) | (0.0946) | (0.258) | - |
| Constant | 0.247* | -0.987 | 0.0494 | 2.801* |
| | (0.147) | (0.837) | (0.766) | (1.455) |
| R-squared (overall) | 0.185 | 0.0332 | 0.141 | 0.0148 |
| R-squared (within) | 0.120 | 0.211 | 0.655 | 0.703 |
| Observations | 2009 | 2009 | 580 | 580 |

**Notes:** The dependent variable is the amount of money sent overseas. In addition to the coefficients reported above, the regressions also include Australian state of residence controls, which are not reported due to low significance. The sample is limited to Primary Applicants for Australian Residency aged 15 or older who have non-missing data on former country of residence. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

A comparison of the outcomes from the ordered multinominal probit model and the linear panel model shows support for the former model. The ordered probit model has an advantage over the linear panel model in the number of significant coefficients influencing the remitted amount, which enables the presentation of a more realistic picture[27]. Besides, it is highly unlikely that parameters such as income and financial assets brought into Australia have no

[27] This lack of significance of coefficients in the linear panel model estimates could be caused by errors in variables due to using the midpoints of the grouping of remitted amounts in the first and second interviews of LSIA1 and by using rounded values in LSIA2.

influence on immigrants' decisions about the size of remitted amounts. These factors, however, do not show any significance in the case of the linear panel model estimates using LSIA2 data. Thus, according to the results presented in Table 4.5 and Table 4.6, the ordered probit model produces more plausible estimates, at least for individuals from LSIA2.

### 4.5.2 Tobit model

Similar to the research by Brown (1997) and Amuedo-Dorantes and Pozo (2006), the determinants of migrants' remittances were investigated by applying the Tobit model (4.4) to LSIA1 and LSIA2. Since the random effects model failed to converge when LSIA2 data were used, a fixed effects model was applied to the second cohort. Table 4.7 presents the results.

In line with previous findings that higher income means both a higher likelihood of remitting and a higher remitted amount, the income coefficient from the Tobit estimate is positive and significant in both surveys. This also applies to being employed as opposed to being unemployed or not in the labour force. Marital status and education do not have a significant role when the decision to remit and the decision on how much to remit are taken simultaneously although they affect each decision individually. Young individuals remit more as they become older, reflecting a similar trend in the probability to remit. The turning point in the Tobit model in LSIA2 is the age of 33, seven years more than in the probit model analysis in Table 4.4, whereas the turning point in LSIA1 remains unchanged at the age of 32. The effect of the development of the country of origin is also evident in this case. For example, immigrants from North America and Europe are less likely to remit than immigrants from less prosperous Pacific countries. As found earlier, the probability and the size of remittances from both cohorts are both higher when migrants have left their children in their home country. The results of the Tobit model also confirm the ordered probit model results, showing that immigrants tend to remit higher amounts with every additional year in Australia.

## Table 4.7 Results of the Tobit model predicting factors affecting the remittances of immigrants, LSIA1 and LSIA2 (panel data)

| Variables | 1993-1995 arrivals | 1999-2000 arrivals | Variables | 1993-1995 arrivals | 1999-2000 arrivals |
|---|---|---|---|---|---|
| | | | **Continents (Oceania (excl. Australia)=base case):** | | |
| Income | 0.0499*** | 0.128** | Asia | 0.0536** | -0.113 |
| | (0.00673) | (0.0538) | | (0.0227) | (0.273) |
| Fin. assets arrived with | -0.00385*** | -0.00160 | Africa | -0.0691* | -0.151 |
| | (0.00112) | (0.00641) | | (0.0378) | (0.324) |
| Fin. assets transferred to AUS | -0.00105 | -0.00922 | North America | -0.110** | -0.875** |
| | (0.00132) | (0.00957) | | (0.0478) | (0.388) |
| Fin. assets transferred from AUS | 0.000884 | 0.182*** | South America | -0.0334 | 0.614 |
| | (0.00338) | (0.0474) | | (0.0502) | (0.409) |
| Age | 0.00872 | 0.0950** | Europe | -0.155*** | -0.888*** |
| | (0.00560) | (0.0424) | | (0.0263) | (0.295) |
| Age squared | -0.000137** | -0.00146*** | **Visa Category (Independent=base case):** | | |
| | (0.0000662) | (0.000521) | | | |
| Gender | 0.0293 | 0.0943 | Skilled - Sponsored | -0.0416 | -0.0627 |
| | (0.0201) | (0.142) | | (0.0311) | (0.240) |
| No. of children | 0.0286** | -0.0263 | Skilled - Business | -0.110*** | -0.466* |
| | (0.0112) | (0.0896) | | (0.0376) | (0.271) |
| No. of persons | -0.0257*** | -0.0632 | Humanitarian | 0.198*** | -0.0186 |
| | (0.00781) | (0.0622) | | (0.0334) | (0.272) |
| Plan to leave | 0.0493 | 0.318 | Family | -0.0361 | -0.0891 |
| | (0.0343) | (0.422) | | (0.0298) | (0.213) |
| **Marital status (Married=base case):** | | | **Relatives overseas:** | | |
| Previously married | 0.0285 | -0.140 | Spouse | 0.128** | -0.371 |
| | (0.0330) | (0.280) | | (0.0506) | (0.474) |
| Never been married | -0.0385 | -0.143 | Children | 0.221*** | 1.065*** |
| | (0.0265) | (0.193) | | (0.0311) | (0.234) |
| **Level of highest education (No post-school qualification=base case):** | | | Parents | 0.0905*** | 0.0369 |
| | | | | (0.0270) | (0.220) |
| Bachelor degree or higher | -0.0374 | -0.0755 | Brothers and sisters | 0.0721** | -0.0235 |
| | (0.0246) | (0.176) | | (0.0318) | (0.230) |
| Other post-school qualification | -0.0230 | -0.0808 | | | |
| | (0.0245) | (0.171) | | | |
| **Employment status (Employed=base case):** | | | Year =1 for 2nd interview (only for 1999-2001 arrivals) | | 1.034*** |
| | | | | | (0.139) |
| Unemployed | -0.245*** | -0.794*** | Constant | -0.778*** | -4.958*** |
| | (0.0276) | (0.292) | | (0.130) | (1.004) |
| Not in labour force | -0.170*** | -0.615*** | | | |
| | (0.0234) | (0.184) | | | |
| **Housing arrangements (Own/Pay mortgage=base case):** | | | | | |
| Rent | -0.0553*** | 0.117 | Log likelihood | -3983 | -1289 |
| | (0.0201) | (0.164) | Pseudo-R-squared | | 0.0871 |
| Rent free | -0.0902** | -0.0284 | | | |
| | (0.0364) | (0.273) | Observations | 10302 | 4353 |

**Notes:** The dependent variable is money sent overseas. In addition to the coefficients reported above, the regressions also include Australian state of residence controls, which are not reported due to low significance. The sample is limited to Primary Applicants for Australian Residency aged 15 or older who have non-missing data on country of origin. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1. Author's robustness checks indicate that these estimations are not converged on the corner solutions at at least 1% level.

As before, there are more significant coefficients for estimates obtained using LSIA1 than using the later cohort data. For example, according to Table 4.7, every additional dollar of the financial assets immigrants from LSIA1 brought with them to the country decreases their probability of remitting as well as the remitted amount. The value of these assets, however, is not significant for immigrants from LSIA2 due to its opposite effects on an immigrant's decision to remit and their remitted amount as reflected in Tables 4.4 and 4.5, which could counterbalance each other. Surprisingly, the negative effect of having an additional resident child on an immigrant's likelihood to remit in LSIA1 turned positive when the probability of remitting and remitted amounts are analysed simultaneously. This is not applicable to the number of residents in immigrant households in the same cohort as it negatively affects both an immigrant's probability of remitting and their simultaneous decisions on whether to remit and how much to remit. Not owning a house decreases the propensity of immigrants in LSIA1, unlike in LSIA2, to remit as well as their remitted amounts. These results are similar to the results from the probit model, even though the ordered probit and linear panel model estimates reflect this effect only partially. Likewise, a strong negative effect of originating from Africa and a strong positive effect of originating from Asia on immigrants' propensity to remit are evident only for immigrants from LSIA1. Having a spouse overseas, in this survey, affects the size of remittances but not the likelihood of remitting, and this effect is also evident in the Tobit model results. Having parents or siblings abroad also shows a positive influence in the Tobit model estimates for the first cohort, although having any relative of this kind positively affects their propensity to remit but not the amount.

Although the negative effect of arriving on a Business Visa is present for both cohorts, a positive influence of entering Australia as refugee, compared to the benchmark group of independent applicants, does not influence the remitting decisions of LSIA2 immigrants. This positive effect, despite being present in the probabilities to remit of both groups, is less powerful for migrants from the second survey and could have been nullified by the negative effect on their remitted amount (Table 4.5) when both the probability and the amount are analysed simultaneously. The varying influence of a visa category on the remitting behaviour of immigrants arriving in Australia at different periods, as reflected in the Tobit model estimates, could also be attributed to the change in immigration laws.

This model, however, might not be the best fit for the description of the remitting behaviour of Australian immigrants. As can be seen from Table 4.4 to Table 4.7, by using the Tobit model, it is possible to overlook some factors which could affect either the probability of

remitting or the remitted amount, but not both. Additionally, as in the case of financial assets transferred to Australia by LSIA1 immigrants, if the estimated coefficients in the probit model and in the ordered probit model (or the linear panel model) are of opposite signs, these effects can cancel each other. Even if they do not, the dominant effect might be misleading as it may conceal less prominent effects. These hidden effects may be significant for at least one decision-making process but not when both decisions are linked. The Heckman model, on the other hand, accounts for the difference in the factors affecting selection and outcome models while these two models are still related to each other.

### 4.5.3 Heckman two-step model

As discussed in the Data and Methodology section, the Heckman two-step procedure in this research involved first the estimation of the likelihood of remitting by Australian immigrants from LSIA1 and LSIA2 by applying model (4.1) to both samples separately. This allowed the estimate of the Inverse Mills ratio for both cohorts using formula (4.5), which could then be substituted into the linear panel model (4.3) and applied only to those immigrants from LSIA1 or LSIA2 who remitted at least some amount. Initially, information about relatives overseas was to be excluded from the outcome model to avoid multicollinearity and to generate credible estimates. However, Table 4.5 and Table 4.6 show that having a spouse overseas increases the remitted amounts by immigrants from LSIA1 and having children overseas increases the remitted amounts by both cohorts. These two variables, accordingly, were also included in the outcome stage; however, the variable of having children overseas did not show any significance and was dropped. Hence, only information about having a spouse overseas was included in the final estimates of the remitted amount. A single command in STATA allows the estimation of the Heckman two-step procedure, providing outcomes for both the selection and outcome stages which are presented in Table 4.8.

The outcomes from the selection stage shown in Table 4.8 are very similar to the ones in Table 4.4 obtained by using the probit model (4.1), with a few exceptions. The first exception is that, unlike in the probit model, paying rent compared to owning a house in the Heckman model does not negatively affect the remitting probability for immigrants in the first cohort. The probability of remitting by immigrants from LSIA2, in turn, is not negatively associated with their living rent free. In contrast, plans by LSIA1 respondents to leave the country positively affect their likelihood of remitting only when the Heckman model is applied.

Likewise, men from LSIA1 are more likely to remit than women in the Heckman model estimates but not when this probability is estimated independently.

**Table 4.8 Results of the Heckman model predicting factors affecting the choice of participating and the choice of amounts immigrants remit overseas, LSIA1 and LSIA2 (panel data)**

| | 1993-1995 arrivals | | 1999-2000 arrivals | |
|---|---|---|---|---|
| **Variables** | **Is money remitted** | **Amount of money** | **Is money remitted** | **Amount of money** |
| Income | 0.0796*** | 0.0121 | 0.0400* | 0.0424 |
| | (0.0127) | (0.00829) | (0.0209) | (0.0487) |
| Fin. assets arrived with | -0.00980*** | 0.00649*** | -0.00866*** | 0.00754 |
| | (0.00215) | (0.00131) | (0.00328) | (0.00832) |
| Fin. assets transferred to AUS | -0.0121*** | 0.0211*** | -0.00637 | 0.00664 |
| | (0.00382) | (0.00248) | (0.00458) | (0.0107) |
| Fin. assets transferred from AUS | 0.0108 | 0.260*** | 0.0578** | 0.827*** |
| | (0.00949) | (0.0334) | (0.0254) | (0.110) |
| Age | 0.0127 | -0.0113* | 0.0291* | 0.0409 |
| | (0.00991) | (0.00628) | (0.0166) | (0.0384) |
| Age squared | -0.000274** | 0.000179** | -0.000539*** | -0.000452 |
| | (0.000119) | (0.0000781) | (0.000202) | (0.000487) |
| Gender (1 if male) | 0.0573* | 0.0175 | -0.0281 | 0.217* |
| | (0.0348) | (0.0200) | (0.0573) | (0.125) |
| No. of children | 0.0608*** | -0.00312 | 0.00762 | -0.0746 |
| | (0.0205) | (0.0115) | (0.0344) | (0.0693) |
| No. of persons | -0.0419*** | -0.00666 | -0.00102 | 0.0129 |
| | (0.0146) | (0.00856) | (0.0233) | (0.0452) |
| Plan to leave | 0.126* | -0.0260 | 0.272 | 0.0850 |
| | (0.0660) | (0.0360) | (0.190) | (0.384) |
| **Marital status (Married=base case):** | | | | |
| Previously married | -0.00000867 | 0.0215 | -0.140 | 0.0799 |
| | (0.0608) | (0.0334) | (0.113) | (0.245) |
| Never been married | -0.101** | 0.0602** | -0.109 | -0.000576 |
| | (0.0482) | (0.0272) | (0.0785) | (0.167) |
| **Level of highest education (No post-school qualification=base case):** | | | | |
| Bachelor degree or higher | -0.111*** | 0.0344 | -0.103 | 0.184 |
| | (0.0419) | (0.0238) | (0.0701) | (0.152) |
| Other post-school qualification | -0.118*** | 0.0879*** | -0.152** | -0.0257 |
| | (0.0419) | (0.0241) | (0.0697) | (0.165) |
| **Employment status (Employed=base case):** | | | | |
| Unemployed | -0.507*** | -0.0232 | -0.566*** | -0.238 |
| | (0.0525) | (0.0384) | (0.111) | (0.330) |
| Not in labour force | -0.330*** | -0.00340 | -0.512*** | -0.127 |
| | (0.0443) | (0.0292) | (0.0735) | (0.247) |
| **Housing arrangements (Own/Pay mortgage=base case):** | | | | |
| Rent | -0.0277 | -0.0526** | 0.0128 | 0.0520 |
| | (0.0381) | (0.0211) | (0.0692) | (0.145) |
| Rent free | -0.140** | -0.0363 | -0.171 | -0.00436 |
| | (0.0698) | (0.0402) | (0.109) | (0.238) |

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**Table 4.8 (continued)**

| | 1993-1995 arrivals | | 1999-2000 arrivals | |
|---|---|---|---|---|
| **Variables** | **Is money remitted** | **Amount of money** | **Is money remitted** | **Amount of money** |
| **Continents (Oceania (excl. Australia)=base case):** | | | | |
| Asia | 0.0859** | 0.0210 | -0.214* | 0.0391 |
| | (0.0388) | (0.0209) | (0.115) | (0.226) |
| Africa | -0.152** | 0.0160 | -0.187 | -0.0293 |
| | (0.0644) | (0.0365) | (0.136) | (0.265) |
| North America | -0.209*** | -0.0422 | -0.785*** | -0.0838 |
| | (0.0812) | (0.0469) | (0.167) | (0.433) |
| South America | -0.0839 | -0.0102 | -0.0180 | 1.298*** |
| | (0.0859) | (0.0479) | (0.180) | (0.341) |
| Europe | -0.331*** | 0.0161 | -0.553*** | -0.140 |
| | (0.0448) | (0.0301) | (0.122) | (0.316) |
| **Visa Category (Independent=base case):** | | | | |
| Skilled - Sponsored | -0.0193 | -0.0848*** | 0.0877 | -0.0489 |
| | (0.0532) | (0.0291) | (0.104) | (0.213) |
| Skilled - Business | -0.239*** | 0.0878** | -0.252** | -0.0755 |
| | (0.0654) | (0.0390) | (0.118) | (0.277) |
| Humanitarian | 0.463*** | -0.0642* | 0.370*** | 0.0828 |
| | (0.0576) | (0.0370) | (0.111) | (0.272) |
| Family | -0.0302 | -0.0376 | 0.0842 | 0.0929 |
| | (0.0513) | (0.0288) | (0.0907) | (0.200) |
| **Relatives overseas:** | | | | |
| Spouse | 0.0569 | 0.161*** | -0.112 | -0.0899 |
| | (0.0989) | (0.0492) | (0.190) | (0.387) |
| Children | 0.521*** | | 0.492*** | |
| | (0.0575) | | (0.0978) | |
| Parents | 0.213*** | | 0.0381 | |
| | (0.0498) | | (0.0883) | |
| Brothers and sisters | 0.147** | | 0.0172 | |
| | (0.0571) | | (0.0939) | |
| Constant | -1.245*** | 0.486*** | -1.165*** | -1.534 |
| | (0.231) | (0.168) | (0.390) | (1.166) |
| Inv. Mills ratio | | -0.133** | | 0.252 |
| | | (0.0665) | | (0.503) |
| Pseudo R-Squared | 0.0822 | | 0.0859 | |
| Observations | 10289 | 10289 | 4350 | 4350 |

**Notes:** The dependent variables are the probability of remitting and the remitted amount. In addition to the coefficients reported above, the regressions also include Australian state of residence controls, which are not reported due to low significance. The sample is limited to Primary Applicants for Australian Residency aged 15 or older who have non-missing data on country of origin. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1. Author's robustness checks indicate that these estimations are not converged on the corner solutions at at least 1% level.

As for the outcome stage, reflecting the previously observed trend, there are more factors affecting the remitted amounts in the first cohort than in the second cohort. At the same time, the Heckman model estimates for the first cohort have fewer significant factors than the ordered probit estimates of their remitted amounts reported in Table 4.5. For example, even though a U-shaped effect of age with the turning point at the age of 32 and a negative effect

of paying rent as opposed to owning a house are detected using the Heckman model but not the ordered probit model, a number of other factors have lost their significance. These are the positive influences of income, being male, having a bachelor degree or higher as opposed to having no post-school education, being employed, living rent-free as opposed to living in one's own house, and originating from Asia. Similarly, Family Visa holders do not remit lower amounts than the Independent Visa group, unlike in the ordered probit model outcome. Having left a spouse overseas is associated with a higher remitted amount by individuals from the first cohort in the Heckman model. This is consistent with the linear panel model estimates but not apparent when the ordered dependent model is applied.

Similar to LSIA1 results, LSIA2 results reveal a lower number of significant coefficients than the ordered probit model estimates of their remitted amounts. Although, unlike in the ordered dependent model, being a male is associated with higher remitted amounts, the positive effects of income, assets arrived with, age, originating from Asia and North America as opposed to coming from Oceania, and being employed as opposed to not being in labour force lose their significance when the Heckman model is applied to LSIA2. Likewise, holding a visa from the Skilled-Sponsored, Humanitarian and Family categories for immigrants from this cohort does not negatively influence their remitted amounts, unlike when the ordered probit model is employed.

The results in Table 4.8 also suggest that changes in immigration policy may not be significant in determining the remitting probability but can influence the remitted amounts. In LSIA2, the Skilled-Independent immigrants do not remit greater amounts than immigrants under the Skilled-Sponsored or Humanitarian Visas, as is the case for the first cohort. Likewise, they do not send less money than Business Visa holders. As discussed earlier, the first and second cohorts were subject to different immigration laws, mainly affecting Skilled Visa applicants. Specifically, there are about 35 per cent of immigrants on Skilled-Independent Visa and 20 per cent of immigrants on Skilled-Sponsored Visa in the second cohort who entered on visas assessed prior to the new points test of 1 July 1999 (Chiswick & Miller 2004). Hence, the majority of immigrants from the second cohort on points-tested visas were subjected to a new test, and a comparison of the remittances of the two groups can provide some insight into how these amendments affected the remitting decisions of immigrants.

Considering that different outcomes are achieved by the application of different models, a conclusion can be drawn only when the most appropriate models – the two-part model, the Tobit model or the Heckman two-step model – were applied to each cohort. The process for selecting the most efficient models to describe both the remitting probability and the remitted amount for immigrants from LSIA1 and LSIA2 is described in the next subsection.

### 4.5.4 Summary

As there are three different models reviewed in this chapter, this subsection first presents the outcomes from these approaches and discusses what is the best model to describe the remitting behaviour of each cohort. Based on the selected models, the factors that determine the willingness and ability to remit by the immigrants from LSIA1 and LSIA2 are then discussed. Finally, whether any discrepancies in these determinants between the two cohorts can be explained by the changes in the Australian immigration policy introduced in 1999 is analysed.

To begin with, the results from the two-part model, the Tobit model and the Heckman two-step model applied to LSIA1 and LSIA2 are summarised in Tables 4.9 and 4.10. These tables present only those coefficients that show significance in at least one regression. For the sake of completeness, the list of variables that appeared to be insignificant for the remitting decisions is presented in Table 4.11.

The differences in sign and magnitude of quite a few of the coefficients on independent variables in the analyses of remitting probability and the remitted amount, detected in Table 4.9 and Table 4.10, emphasise the benefits of the two-step analysis. This excludes the Tobit model, which assumes that decisions on whether to remit and how much to remit occur simultaneously, and narrows the selection to either the two-part model or Heckman two-step model. There are advantages and disadvantages of both approaches. The two-part model, although being the more straightforward and easy to use, does not account for the sample selection problem common in survey data; whereas the Heckman approach specifically designed to tackle this issue excludes at least one independent variable from the outcome model and, as argued by Vaara and Matero (2011), this exclusion may be based on insufficient theoretical justification. Hence, according to the practical advice given by Puhani (2000), the preferred method should be decided on a case-by-case basis.

## Table 4.9 Summary of results for all models applied to 1993–1995 arrivals, LSIA1

| Variables | Two-part model | | | Tobit | Heckman two-step | |
|---|---|---|---|---|---|---|
| | Probit | Ordered probit | RE linear model | | Selection stage | Outcome stage |
| Income | 0.116*** | 0.131*** | 0.0210*** | 0.0499*** | 0.0796*** | 0.0121 |
| Fin. assets arrived with | -0.0152*** | 0.00768** | 0.00648*** | -0.00385*** | -0.00980*** | 0.00649*** |
| Fin. assets transferred to AUS | -0.0155*** | 0.0216*** | 0.0201*** | -0.00105 | -0.0121*** | 0.0211*** |
| Fin. assets transferred from AUS | 0.00924 | 0.592*** | 0.242*** | 0.000884 | 0.0108 | 0.260*** |
| Age | 0.0256* | -0.0248 | -0.00956 | 0.00872 | 0.0127 | -0.0113* |
| Age squared | -0.000416** | 0.000329 | 0.000146* | -0.000137** | -0.000274** | 0.000179** |
| Gender (1 if male) | 0.0554 | 0.220*** | 0.0144 | 0.0293 | 0.0573* | 0.0175 |
| No. of children | -0.0962*** | -0.00548 | 0.00509 | 0.0286** | 0.0608*** | -0.00312 |
| No. of persons | -0.0636*** | -0.0642** | -0.0121 | -0.0257*** | -0.0419*** | -0.00666 |
| Plan to leave | 0.138 | 0.0708 | -0.0115 | 0.0493 | 0.126* | -0.0260 |
| **Marital status (Married=base case):** | | | | | | |
| Never been married | -0.143** | 0.287*** | 0.0399 | -0.0385 | -0.101** | 0.0602** |
| **Level of highest education:** | | | | | | |
| Bachelor degree or higher | -0.140** | 0.156* | 0.0232 | -0.0374 | -0.111*** | 0.0344 |
| Other post-school | -0.150** | 0.310*** | 0.0712*** | -0.0230 | -0.118*** | 0.0879*** |
| **Employment status (Employed=base case):** | | | | | | |
| Unemployed | -0.673*** | -0.306*** | -0.0687** | -0.245*** | -0.507*** | -0.0232 |
| Not in labour force | -0.500*** | -0.199** | -0.0386 | -0.170*** | -0.330*** | -0.00340 |
| **Housing arrangements (Own/Pay mortgage=base case):** | | | | | | |
| Rent | -0.115** | 0.0172 | -0.0507** | -0.0553*** | -0.0277 | -0.0526** |
| Rent free | -0.247*** | 0.267* | -0.0380 | -0.0902** | -0.140** | -0.0363 |
| **Continents (Oceania (excl. Australia)=base case):** | | | | | | |
| Asia | 0.115* | 0.121* | 0.0305 | 0.0536** | 0.0859** | 0.0210 |
| Africa | -0.212** | -0.0294 | -0.00455 | -0.0691* | -0.152** | 0.0160 |
| North America | -0.261** | -0.254 | -0.0631 | -0.110** | -0.209*** | -0.0422 |
| South America | -0.0864 | -0.152 | -0.0206 | -0.0334 | -0.0839 | -0.0102 |
| Europe | -0.451*** | -0.109 | -0.0141 | -0.155*** | -0.331*** | 0.0161 |
| **Visa Category (Skilled-Independent=base case):** | | | | | | |
| Skilled - Sponsored | -0.0339 | -0.344*** | -0.0864*** | -0.0416 | -0.0193 | -0.0848*** |
| Skilled - Business | -0.345*** | 0.208* | 0.0631 | -0.110*** | -0.239*** | 0.0878** |
| Humanitarian | 0.638*** | -0.216** | -0.0215 | 0.198*** | 0.463*** | -0.0642* |
| Family | -0.0266 | -0.218** | -0.0457 | -0.0361 | -0.0302 | -0.0376 |
| **Relatives overseas:** | | | | | | |
| Spouse | 0.134 | 0.247 | 0.156*** | 0.128** | 0.0569 | 0.161*** |
| Children | 0.543*** | 0.380*** | 0.0373 | 0.221*** | 0.521*** | |
| Parents | 0.236*** | 0.133 | 0.0164 | 0.0905*** | 0.213*** | |
| Brothers and sisters | 0.171** | 0.203 | 0.0274 | 0.0721** | 0.147** | |
| Constant | -1.750*** | | 0.247* | -0.778*** | -1.245*** | 0.486*** |
| Inv. Mills ratio | | | | | | -0.133** |
| Year1=1 if 2nd interview | | 0.369*** | | | | |
| Year2=1 if 3rd interview | | 0.869*** | | | | |
| Observations | 10302 | 2009 | 2009 | 10302 | 10289 | 10289 |

**Notes:** Only coefficients which are significant in at least one model are included. The sample is limited to Primary Applicants for Australian Residency aged 15 or older who have non-missing data on country of origin. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

## Table 4.10 Summary of results for all models applied to 1999–2000 arrivals, LSIA2

| Variables | Two-part model | | | Tobit | Heckman two-step | |
|---|---|---|---|---|---|---|
| | Probit | Ordered probit | RE linear model | | Selection stage | Outcome stage |
| Income | 0.0566** | 0.138** | 0.0134 | 0.128** | 0.0400* | 0.0424 |
| Fin. assets arrived with | -0.0115** | 0.0144** | 0.0113 | -0.00160 | -0.00866*** | 0.00754 |
| Fin. assets transferred from AUS | 0.0750** | 1.121*** | 0.658*** | 0.182*** | 0.0578** | 0.827*** |
| Age | 0.0353 | 0.0356 | -0.0107 | 0.0950** | 0.0291* | 0.0409 |
| Age squared | -0.000667** | -0.000464 | 0.000285 | -0.00146*** | -0.000539*** | -0.000452 |
| Gender (1 if male) | -0.0475 | 0.0895 | 0.273* | 0.0943 | -0.0281 | 0.217* |
| **Marital status (Married=base case):** | | | | | | |
| Never been married | -0.152 | 0.291 | -0.142* | -0.143 | -0.109 | -0.000576 |
| **Level of highest education (No post-school qualification=base case):** | | | | | | |
| Other post-school | -0.213** | -0.113 | -0.0223 | -0.0808 | -0.152** | -0.0257 |
| **Employment status (Employed=base case):** | | | | | | |
| Unemployed | -0.756*** | -0.528 | 0.0274 | -0.794*** | -0.566*** | -0.238 |
| Not in labour force | -0.711*** | -0.520*** | -0.0387 | -0.615*** | -0.512*** | -0.127 |
| **Housing arrangements (Own/Pay mortgage=base case)** | | | | | | |
| Rent free | -0.292** | 0.124 | 0.0277 | -0.0284 | -0.171 | -0.00436 |
| **Continents (Oceania (excl. Australia)=base case)** | | | | | | |
| Asia | -0.288* | 0.616** | 0.0622 | -0.113 | -0.214* | 0.0391 |
| North America | -1.076*** | 0.789* | 0.0808 | -0.875** | -0.785*** | -0.0838 |
| South America | -0.0472 | 1.147*** | 1.521*** | 0.614 | -0.0180 | 1.298*** |
| Europe | -0.771*** | 0.396 | 0.00551 | -0.888*** | -0.553*** | -0.140 |
| **Visa Category (Skilled-Independent=base case):** | | | | | | |
| Skilled - Sponsored | 0.111 | -0.473** | -0.104 | -0.0627 | 0.0877 | -0.0489 |
| Skilled - Business | -0.340** | 0.294 | -0.0197 | -0.466* | -0.252** | -0.0755 |
| Humanitarian | 0.546*** | -0.899*** | -0.133 | -0.0186 | 0.370*** | 0.0828 |
| Family | 0.139 | -0.601*** | 0.00593 | -0.0891 | 0.0842 | 0.0929 |
| **Relatives overseas:** | | | | | | |
| Children | 0.642*** | 0.680*** | -0.165 | 1.065*** | 0.492*** | |
| Constant | -1.425*** | | 0.0494 | -4.958*** | -1.165*** | -1.534 |
| Inv. Mills ratio | | | | | | 0.252 |
| Year1=1 if 2nd interview | | 0.427*** | | 1.034*** | | |
| Observations | 4353 | 580 | 580 | 4353 | 4350 | 4350 |

**Notes:** Only coefficients which are significant in at least one model are included. The sample is limited to Primary Applicants for Australian Residency aged 15 or older who have non-missing data on country of origin. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

**Table 4.11 Independent variables not influencing remitting decisions, LSIA1 and LSIA2**

| 1993–1995 arrivals | 1999–2000 arrivals |
|---|---|
| Previously married (Married= base case) | Financial assets transferred to Australia |
| | No. of children |
| | No. of persons |
| | Plan to leave |
| | Previously married (Married= base case) |
| | Bachelor degree or higher (No post-school qualification=base case) |
| | Rent (Own/Pay mortgage=base case) |
| | Africa (Oceania excl. Australia=base case) |
| | Spouse |
| | Parents |
| | Brothers and sisters |

**Notes:** The sample is limited to Primary Applicants for Australian Residency aged 15 or older who have non-missing data on country of origin.

The selection of the most appropriate model depends on whether there is an issue with the data such as the presence of selection bias – equivalent to an omitted variable problem (Wooldridge 2002b) – and on the assumptions about the significance of the excluded variables in the Heckman model. According to Achen (1986), the selection problem does not exist in two types of situation. First, it might be the case when the unmeasured factors influencing the selection equation are uncorrelated with the unmeasured factors influencing the outcome equation. In this case, it would be assumed that the unmeasured personal characteristics that affect the probability of remitting do not influence the amount of this transaction. Second, there is no selection problem if every variable affecting the selection equation is also controlled in the outcome stage. If these two types of situations occur, then there is no selection bias problem and a two-part model can be applied.

The Inverse Mills ratio was used to identify whether there was selection bias and if the application of the Heckman two-step model was necessary (Amuedo-Dorantes & Pozo 2006; Vaara & Matero 2011). The negative and significant value of the Inverse Mills ratio in the LSIA1 estimates suggested a negative correlation between the error terms in the selection and

outcome equations. It meant that there were some unobserved characteristics that affected the probability of remitting and the remitted amount in the opposite directions, and this implied the presence of selection bias. Therefore, the Heckman model described the remitting behaviour of immigrants from the first cohort better than the two-part model. Following the same logic, the p-value of the Mills ratio in the Heckman model estimates for LSIA2 indicated that there was no omitted variable bias, hence the implementation of the Heckman estimation was not required. The two-part model used the same independent variables in both stages, thus the second condition of the absence of selection bias was also met.

In this model, the probit model estimates the probability of remitting and either the ordered dependent model or the linear panel model are used to estimate the remitted amount. Although using the linear panel model is more straightforward, the low number of significant coefficients when this model is applied compared to the ordered probit estimates suggests that the latter model is more efficient[28]. Therefore, for the second cohort, the two-part model with the probit and the ordered dependent variable approaches was a better alternative.

The outcomes of these selected models applied to both cohorts were used to identify the personal characteristics that influence the remitting behaviour of immigrants.

The probability of remitting by immigrants from LSIA1, as can be seen in the estimates from the selection stage of the Heckman model in Table 4.9**,** is positively influenced by income, being employed, being older for individuals up to the age of 23**,** and the number of resident children. The last effect could probably be the result, and not the reason, for certain levels of remitting performance with those individuals who remit more also being able to afford more children. Likewise, a lower likelihood of remitting for those individuals who do not pay any rent as opposed to living in their own house could be a consequence of a poor financial situation not allowing them to send money overseas rather than its cause. A negative correlation of the value of financial assets with the probability of sending money overseas could be attributed to the lower need for financial support by families of individuals who have more financial assets. Male respondents are more likely to remit, reflecting the stereotypical role of the provider. A higher number of people in the household reduces the likelihood of remitting but planning to leave Australia for good gives more incentives to

[28] A lower plausibility of estimates produced when the linear panel model was applied to LSIA2, could be attributed to the use of values rounded to the nearest thousand in this survey and not the actual remitted amounts.

transfer money overseas. Being married as opposed to never being in a relationship suggests higher responsibility and accordingly higher chances of sending money to support families in the home country. Individuals without any post-school qualification are also more likely to remit than their more educated counterparts. The possible reason is that the families of those individuals who could afford the high cost of post-school education are better off than the families of less educated individuals. Having arrived from Asia increases, and having arrived from Africa, North America and Europe reduces, the likelihood of this financial support compared to the benchmark group of immigrants from Oceania. The probability to remit by all immigrants, however, increases if they have relatives overseas other than spouses. Lastly, this probability also depends on the type of visa used by immigrants to enter Australia. For example, immigrants under the Business Visa are less likely, and those under the Humanitarian Visa are more likely, to remit than the base case of immigrants holding the Skilled-Independent Visa.

Unlike the first cohort, the remitting probability of immigrants from LSIA2 is not influenced by the value of financial assets transferred to Australia, gender, number of children, number of household members, plans to leave Australia permanently and marital status. However, like those in LSIA1, employed, well-paid, uneducated and living rent free immigrants in LSIA2 are more likely to remit, according to the results in the first column of Table 4.10. The value of financial assets transferred from Australia positively affects their remitting probability in contrast with the null effect for the first cohort. Similarly to LSIA1, the remitting probability of LSIA2 immigrants originated from North America and Europe is lower than that of immigrants from the Pacific Islands but, in contrast with LSIA1, this applies to immigrants from Asia as well. Only having left their children in their home countries influences the decision to remit of the second cohort of immigrants, whereas having the spouse, parents or siblings overseas does not matter in this context. Similar to immigrants from LSIA1, LSIA2 immigrants under the Business Visa are less likely, and immigrants arrived under the Humanitarian Program are more likely, to remit overseas. This suggests that there are cohort differences between the estimates of these two surveys; however, the changes in immigration policies in the late 1990s did not affect the likelihood of remitting by immigrants.

Next, factors affecting immigrants' decisions about how much to remit were identified and compared between the cohorts. The insignificance in the later arrivals of some effects detected for the first cohort, such as the positive effects from having a higher value of

financial assets transferred to Australia and from having post-school education below bachelor degree, and the negative effect from being older for individuals up to the age of 32 can be attributed to the differences between these cohorts. Likewise, the negative effect of paying rent as opposed to having one's own house, attributable only to LSIA1 migrants, and the higher remitted amounts for migrants from South America, North America and Asia than for migrants from Oceania, detected only in LSIA2, could be caused by cohort differences. The positive influence on the remitted amount of having left the spouse in the home country in the first cohort is not present in the second. Instead, in the second cohort, individuals with children overseas send higher amounts than those without children overseas, which is not applicable to the survey carried out earlier.

Changes in the factors affecting remitted amounts, on the other hand, can also be explained by the change in the pattern of newly arrived immigrants as a result of the immigration reforms in the late 1990s. Specifically, tightening the requirements for passing the points test could have affected the qualities of new skilled migrants to Australia. The employability and financial stability of immigrants in the Skilled-Independent category in LSIA2 allow them to send higher amounts than Family Visas holders can afford. This difference, however, is not present in the first cohort, suggesting that the financial abilities of both groups did not differ much before the new points test. Similarly, the positive effect of holding a Business Visa compared to an Independent Visa is evident only in the first cohort. The negative effect of entering Australia under the Skilled-Sponsored Visa, and the positive effect of entering Australia as refugee, however, persist in both surveys.

These findings suggest that stricter migration requirements reduced the sample of applicants for the Skilled-Independent Visa to the most skilled individuals with the highest chance of finding a stable and well-paid job in Australia. This made them superior to Family Visa holders, and comparable with Business Visa holders, in terms of their financial well-being. This proposed explanation can also be supported by the loss of significance of a positive effect on the remitted amount of holding a post-school qualification below bachelor degree in LSIA2. Education could play an important role for independent applicants and business persons applying for migration to Australia; it could give more points to the Skilled-Independent Visa holders and increase the employability of the Business category. Hence, once respondents from the former group become as qualified and educated as the latter group, the role of education loses its importance. The acquired positive effect of income due to these

changes suggests that after the differences between applicants from these categories are erased, only their capacity to earn income has become significant.

## 4.6 Conclusions

In the preceding chapters, the saving rates and financial risk-taking of immigrants were analysed. The issue of remittances has been considered in this chapter to investigate a different aspect of immigrants' financial behaviour. The worldwide increase in remittance flows from the developed world in the last two decades, as reported by the World Bank, reflects an increase in migration from developing countries. While the surge in remittance outflows from Australia after revision of the points test in 1999 can be also attributed to the increase in the immigration inflows to the country, there could be other contributing factors. This chapter analyses what influences the remitting decisions of immigrants to Australia, and whether changes to Australian immigration policy had an effect on their remittances.

The chapter began with an investigation of the type of model that would be the most suitable to describe the remitting decisions of Australian immigrants by using the LSIA data. Using the selected models, it was then investigated what factors influence immigrants' remittances, and whether these effects differ between immigrants who arrived before the amendments to Australian immigration laws and those who arrived after.

The LSIA data were used since, unlike the HILDA Survey, the respondents in LSIA were asked a set of questions on remittances and financial help. The first question of interest asked respondents if they or their partners sent any money to relatives or friends overseas and the second question clarified the amount sent. The answers to these two questions constitute dependent variables: the probability to remit overseas and the remitted amount. Furthermore, LSIA has valuable data on the type of visa used to migrate to Australia. This additional information provided a different insight into the financial behaviour of immigrants. The remitting patterns of two independent cohorts arrived in 1993–1995 and 1999–2000 were examined and compared with each other.

The findings of this chapter revealed that: first, the Heckman two-step model is the most appropriate model for the estimation of the remitting performance of the first cohort, and the two-part model is the best approach for the second cohort; and second, the effect of holding certain visa categories on the remitted amount by immigrants, but not their remitting

probability, changes between cohorts. This change could be attributable to the change in the profile of Independent Visa holders triggered by the amendments to the skilled migration points test introduced in the late 1990s.

Consistent with other studies, three approaches were used for the analysis of the remitting behaviour of immigrants to Australia. They were the two-part model, the Tobit model and the Heckman two-step model. The outcomes obtained from applying these models were compared to identify the most suitable model. Using the value and the significance of the Inverse Mills Ratio, the Heckman two-step model was selected for the description of the remitting behaviour of immigrants from LSIA1, and the two-part model, with the probit model used in the first part and the ordered probit model in the second, was selected for LSIA2. Although both the Heckman two-step model and the two-part model use a two-stage analysis, the former model presumes two interdependent decisions on whether to remit and at what level, whereas the latter model assumes that these decisions are taken independently. The selected models were used to identify and compare factors affecting the remitting decisions of immigrants from the two cohorts.

The results obtained suggest that the probability of remitting by immigrants to Australia and the amount remitted by them do not depend only on their financial situation. Being financially well off is important for both decisions, although having financial assets can be negatively associated with the likelihood of remitting. Age has a positive effect on the probability of remitting but only up to a certain point, with the maximum participation rate observed for individuals in their 20s, suggesting that immigrants in this age group are most likely to have dependents overseas. Motivational factors such as an individual's plan to leave the country permanently and the level of education obtained before migration to Australia do not show the expected results. In particular, a plan to leave increases the remitting participation but not the amount, and only in the first cohort. Likewise, the probability of remitting is not higher but lower for individuals with post-school education than for those without it. This does not support the implicit co-insurance hypothesis of Stark (1991), consistent with the findings by Brown (1997). On the contrary, it suggests that the families of those individuals who are able to pay high education fees require less financial assistance than families of less educated immigrants.

Demand-side factors such as having relatives overseas, originating from a particular continent and being on a particular type of visa when entering Australia also influence the remitting

performance of immigrants. Being from North America or Europe is associated with a lower remitting probability compared to originating from Oceania in both cohorts, implying that migrants from more prosperous countries are less likely to migrate on humanitarian grounds and hence there is less need for financial support for their families. Changes in the country distribution between LSIA2 and LSIA1 can explain why originating from other continents affects the probability of remitting differently in each cohort. Having children overseas increases the likelihood of remitting by immigrants in both LSIA1 and LSAI2, but positively affects the remitted amount only for immigrants in the second cohort. In contrast, the fact that an individual has left their spouse in their former country of residence positively influences their remitted amount but not their remitting probability, although this is only evident in LSIA1.

The effect of being on a certain type of visa on the probability of remitting by immigrants can be explained by demand from their countries of origin; and the visa effect on the remitted amount can be attributed to the security of their jobs and potential earning abilities. For example, refugees to Australia are more likely, and Business Visa holders are less likely, to need to support their families in their home countries than the benchmark group of independent immigrants. The lower remitted amounts by the Humanitarian Visa and Skilled-Sponsored Visa holders, and the higher amounts by the Business migrants, compared to the Independent Visa holders in LSIA1, suggest that the size of remitted amounts depends on whether individuals have a secure and stable job. The chances of the Independent Visa holders in LSIA2 finding a job are higher than for those in LSIA1 since they were subjected to stricter skills and education requirements under the new skilled migration points test. As a result, their earning potential is comparable with that of the Business Visa holders and exceeds that of respondents from other categories.

To sum up, the changes in the immigration policy did not affect the probability of immigrants to remit abroad, but did affect their remitted amount. The more skilled and educated Independent immigrants in LSIA2, unlike those in LSIA1, are able to send higher amounts of money abroad than the Family Visa holders and they send similar amounts to those sent by the Business category. This suggests that the independent applicants who arrived later were likely to be financially better off than their counterparts who arrived in 1993–1995. The lower reported mean values of the remitted amounts for LSIA2 then could be attributed to the decreased relative proportion of Independent immigrants compared to LSIA1, possibly reflecting an initial negative reaction to more stringent entry requirements to Australia.

The increase in the outward remittances from Australia, hence, can be attributed not only to the overall increase in settlers' arrivals but also to the change in the characteristics of the Skilled-Independent Visa holders. According to the statistics from the Department of Immigration and Citizenship (2008), the increase in the numbers of immigrants since 1997 is mostly caused by the rise in arrivals under the Independent Visa. The remittances from Australia consequently depend more on the qualities of this category of immigrants. Hence, the improvement in an immigrant's earning ability after modifications to the points test such as the rigorous expansion of pre-migration English language testing and the mandatory qualification assessment could have contributed to the surge in the remittance outflows from Australia.

# CHAPTER 5. DOES MONEY BUY HAPPINESS? FINANCIAL AND GENERAL WELL-BEING OF IMMIGRANTS IN AUSTRALIA

## 5.1 Introduction

The effects of increasing immigration on global well-being are a subject of debate among policy-makers. The evidence from the World Bank (2006b) attests that an increase in international migration causes a significant rise in global welfare. They argue that, despite a modest decline in wages in the short run, destination countries benefit through an increase in native wages in the long run and an increase in the overall income of native households due to increased returns to capital. New immigrants and their countries of origin benefit mainly from the wages in the destination countries being higher than the wages in their home countries. At the same time, research shows that immigrants in developed countries are less wealthy than native-born residents, and this could hinder the positive effects of migration. Thus, the immigration phenomenon seems far more complex and diverse than it appears to be at first glance (World Bank 2006a).

This chapter examines the financial and general aspects of immigrants' well-being. The findings reported in Chapter 4 suggested that, due to recent immigration reforms, the financial situation of recent immigrants to Australia has improved. This could imply that immigrants' financial well-being is becoming comparable to that of native-born Australians. Indeed, according to DIAC (2011), the average annual earnings of a recently arrived skilled migrant exceed that of an average Australian by $3,000. However, the changes in immigrants' general well-being are generally overlooked. An improvement in their financial well-being does not guarantee an improvement in the general well-being of immigrants who are also subject to various, not always tangible, costs related to the immigration process. Unhappy residents are not as productive as their happy counterparts (Oswald, Proto & Sgroi 2008), thus making themselves and a country's economy financially worse off than it would otherwise be. Hence, it is important to identify and analyse the factors affecting the general well-being of immigrants in addition to their financial situation.

The purpose of this chapter is to determine the factors affecting the well-being of Australian residents, and to examine whether the well-being of Australians born overseas is different from that of native-born Australians. Well-being in this study is defined by the respondents' own assessments of their satisfaction with life. As the ultimate goal of most people going

through the complicated process of migration is to improve their economic situation, the role of financial well-being in overall well-being is also analysed. Financial well-being in this research is measured by both objective and subjective measures to reflect the role of higher income in the host countries as well as an individual's own perception of financial success. Objective measures are whether households experienced problems paying basic bills and whether they would have difficulty in raising an adequate amount of money in an emergency. Subjective assessments of financial satisfaction and financial prosperity are less specific and are based on an individual's own judgement measured by levels in an ascending order.

The findings described in this chapter indicate that Australian-born individuals are generally more satisfied with their lives than immigrants to Australia, although the levels of their financial satisfaction and their difficulties with timely payments of basic bills are not different. The assessment of one's own financial prosperity, in contrast, is higher for immigrants despite their greater difficulty in raising $2,000 in an emergency relative to the native-born population.

The positive effects of income and wealth on life satisfaction imply that financial well-being is an important domain of general well-being. However, this chapter concludes that the relationship between income and wealth, well-being and financial well-being is not straightforward. As expected, income and wealth both play a positive role in the financial satisfaction and financial prosperity of Australian residents, and a negative role in their inability to pay bills and the degree of their difficulty in raising $2,000 in an emergency. However, only a relative improvement in an immigrant's financial position positively affects their financial well-being. This is reflected in the equal levels of financial satisfaction of Australian immigrants and Australian-born residents due to their similar levels of income and wealth. A high level of immigrants' self-reported financial prosperity is due to the improvement in their financial circumstances compared to their pre-migration financial situations in their home countries. Similarly, an increase in an immigrant's absolute income may be enough to cover basic expenses but may not be sufficient for the ability to raise adequate emergency funds compared to native-born Australians.

It is also investigated whether an immigrant's geographic origin is one of the factors affecting their general well-being, as is the case for their financial well-being. For example, it is found that immigrants from Africa experience greater difficulty in raising $2,000 in an emergency and lower financial prosperity than immigrants from the Pacific Islands. However, the results

show that the life satisfaction of immigrants depends not on which continent they originated from, but rather on the degree of the difference between immigrants' culture and Australian culture. Culture in this context is defined by the dominant religion practised in a country.

The remainder of this chapter is structured as follows: the second section providing a literature review is followed by the third section describing the data and methodology used in this part of the study; the fourth section presents results; and the fifth presents concluding remarks. The findings are grouped into three subsections: first, what determines the general well-being of Australian residents and whether it differs between foreign and Australian-born individuals is investigated; second, their financial well-being is compared; and finally, if applicable, whether immigrants' origins affect differences in general well-being and financial well-being is analysed.

The analysis of immigrants' well-being was carried out using observations on the second cohort of immigrants from LSIA and the two-year data from the HILDA Survey. While the HILDA survey follows a sample of thousands of Australian households, LSIA provides immigrants-only data, and this facilitates a more in-depth analysis.

## 5.2 Literature review

The reasons for international migration have evolved from the initial colonisation goals to seeking better living standards (Tehranian 2003). In the first colonial wave of migration, Europeans moved into hypothetically uninhabited territories where they often either destroyed indigenous populations or brought them back as slaves to work in the New World. Following World War II, North America and Europe became primary destinations of postcolonial migration for Asians, Africans and Latin Americans. The current third wave described as 'globalised migration' began with the oil shock in 1973. In addition to North American and West-European countries, the choice of host countries has extended to Australia, New Zealand and oil-producing countries in South West Asia. The globalisation of migration has also created international travellers such as transnational employees, guest workers, refugees and tourists.

Resettlement is supposed to make migrants happier. Traditionally, it is assumed that a higher income and higher consumption provide higher utility, and that people's satisfaction is positively correlated with the financial value of their assets (Stutzer & Frey 2010). Thus,

overall well-being is supposed to be highly dependent on an individual's financial situation. Indeed, as argued by Van Praag, Frijters and Ferrer-i-Carbonell (2003), financial satisfaction is the most important component of the general well-being of German residents represented by their own assessment of their life satisfaction. Hence, financial well-being is an important indicator of overall well-being.

A number of studies, however, have claimed that immigrants in Australia and other developed countries are in an economically inferior position to native-born people. Amuedo-Dorantes and Pozo (2002), for example, argued that immigrants in the US accumulate less wealth than comparable US-born people do. In particular, they claimed that native-born people have a higher level of precautionary savings, which could, in part, be explained by the immigrants' remittances to their home countries. It has also been argued that between 1984 and 1999 the average wealth of Canadian immigrant families decreased whereas the average wealth of their Canadian-born counterparts substantially increased (Schellenberg & Hou 2005). In addition, Sinning (2007) confirmed that German-born individuals are wealthier than foreign-born individuals in Germany. Similarly, Cobb-Clark and Hildebrand (2008) and Doiron and Guttman (2009) found that Australian immigrant households accumulate less wealth than native-born families do.

This relative disadvantage can undermine the positive effects from immigrants' supposedly improved well-being because an individual's happiness also depends upon their position relative to others. The relative deprivation theory, although popular in social science for a long time, was first mentioned in the economic literature only in the early 1970s by Easterlin (1974, 1995), who initially analysed the happiness of Americans and later expanded his analysis to include Europeans and Japanese. He suggested that, although income growth in a society does not increase its happiness, people with a higher income in a country at a given time are more likely to report being happy. This is because they get utility from a comparison of themselves with others around them. This concept was supported by the negative correlation of happiness at work reported by British respondents with the level of income against which they compare their own income (Clark & Oswald 1996). These findings suggest that the overall impact of migration to an industrialised country on an immigrant's well-being can even be negative if the negative impact from their financial inferiority outweighs the benefits.

Apart from the absolute and relative change in their income, an immigrant's well-being depends on their own assessment of their financial situation, which can change with assimilation with the local population. Slutzer (2004) reported evidence that the happiness of residents of industrialised countries does not increase proportionally with economic growth. What is more, as argued by Easterlin (1995), sometimes the two can even move in opposite directions. As one of the potential explanations for the lack of improvement in an individual's well-being with a higher income, they suggest that this increase is also associated with higher aspirations. Income aspirations increase when people get used to their consumption and income level and strive for more stimulation. Living in a new society suggests conforming to the socially accepted norms, and the acquisition of the prevailing aspirations is inevitable. These new acquisitions in turn can impact on the level of happiness of immigrants.

This underlines the importance of research on the determinants of the well-being of individuals and its correlation with their financial situation. A comparison of the determinants of the well-being of people with different backgrounds is of particular importance for Australia, a country with a high concentration of immigrants. Although its economy is one of the strongest and has the third highest Human Development Index in the world, Australia performs fairly poorly compared to 34 other nations on a range of subjective happiness indicators (Blanchflower & Oswald 2005). More precisely, Australia ranks between 11th and 15th in terms of three well-being indicators. Differences in culture and individual experience could also affect an individual's assessment of their well-being. Hence, apart from the drawbacks of economic development such as an increase in material aspirations, a low level of the subjective well-being of the Australian population could also be explained by the prevalence of the low assessments of those experiencing difficulties with immigration and adaptation to the local culture.

Measuring well-being is a difficult and relatively unconventional task (Oswald 1997). As there are no ready statistics on happiness, some studies have employed statistics on the suicide death rate to examine the other extreme. Suicidal behaviour is found to be positively associated with unemployment and marital problems, and is more common among men (Oswald 1997). Use of these data, however, might not be appropriate, as claimed by Oswald (1997), because suicide represents a response to unhappiness that is more enforced than any response to happiness, and also because it can be a reflection of mental illness. Subjective measures of well-being, according to Oswald (1997), could be generated from answers to questions asking respondents to rate their level of happiness, life satisfaction and mental

distress. Using satisfaction with life as a whole, or with a specific domain, to measure subjective well-being has also been mentioned by Van Praag, Frijters and Ferrer-i-Carbonell (2003) as a common practice. In a similar fashion, the measurement of well-being by Blanchflower and Oswald (2005) involved an individual's assessment of their happiness, satisfaction with their family life, job satisfaction, job stress and the frequency of coming home from work too tired to do domestic chores. Using a subjective measure of well-being accounts for the individual values that do not have a dollar price, such as an individual's relative position in a society or their cultural differences. On the other hand, according to Stutzer and Frey (2010), people constantly compare their past with their future expectations, and thus are unable to produce absolute judgments. This suggests that the subjective measure of well-being should be complemented by objective measures.

Financial well-being is an integral element of general well-being and is characterised by measurements specifically related to finances. Objective measures of the financial situation can be expressed in different ways. Schellenberg and Feng (2005) suggested that the financial well-being of an individual or a family can be measured by the amount of wages and earnings they receive as well as by the wealth or assets accumulated by them. They also mention success in the labour market as a major component of financial well-being. Likewise, Buchler, Haynes and Baxter (2009) examined how financial well-being depends on the type of work the individuals are employed in. They showed that casual employees, who have fewer privileges in the labour market than permanent employees, also have a greater financial burden.

Financial well-being can also be measured by an individual's own perceptions about their financial situation. The conceptual framework for using these measures is similar to that used for estimating overall well-being. Material wealth and income might reveal only one aspect of an immigrant's well-being and not their own perception about their economic condition. In the last few decades, as argued by Stutzer and Frey (2010), individual happiness, mainly studied in sociology and psychology, has become relevant in economics. In the predominant approach, happiness is measured by the utility derived from preferences which are 'choice-connected rankings of outcomes' (Stutzer & Frey 2010, p. 682). Other approaches have included non-objective theoretical analysis, which includes emotions, self-esteem, goal completion, mastery, meaning and status.

Determinants of the well-being of residents of various countries tend to be mostly similar. According to Oswald (1997), in general, happiness is high among women, those who are married, earning high income, white, well-educated, self-employed, retired individuals and those who look after their home. Across different countries, he argued, happiness tends to decrease with age, reaching its lowest around the 30s, and then it starts to increase. Research on European countries has shown that unemployment is another factor that affects life satisfaction, with unemployed people being reported as very unhappy (Oswald 1997). The findings of research based on the British Household Panel Survey data were that joblessness also has a strong negative effect on one's well-being but income does not (Clark & Oswald 1994; Oswald 1997). Van Praag, Frijters and Ferrer-i-Carbonell (2003), who analysed the well-being of German residents, argued that financial, health and job satisfactions are the main determinants of the general satisfaction of workers and non-workers from East and West Germany. Financial satisfaction in this study was found to be lower for men, positively influenced by income and negatively affected by the number of adults and children living in the household. Savings have a positive effect for the satisfaction of all respondents whereas a positive impact of education is evident only for West Germans. The financial satisfaction of both groups is convex-shaped in age, with minimum satisfaction registered in the late 30s for non-workers, and at the ages of 45 and 54 for Western and Eastern workers, respectively.

There is a considerable amount of literature investigating the differences between Australian-born and foreign-born individuals and households in terms of various measures of financial well-being. Cobb-Clark and Hildebrand (2008) as well as Doiron and Guttman (2009) looked at the variation in the structure and distribution of wealth. Both studies concluded that immigrant couples have less wealth than native-born couples. Thapa (2004) compared the risk of unemployment for male immigrants to Australia with that for comparable native-born Australians. He predicted a higher probability of unemployment for immigrants with both an English-speaking and a non-English-speaking background than for the native-born individuals. Likewise, the general conclusion of Boorah and Mangan (2007), who investigated the economic outcomes of immigrants to Australia, was that immigrants who have arrived in Australia relatively recently are worse off than both the immigrants who arrived before 1996 and native-born Australians in terms of household income, employment status and housing conditions.

Nevertheless, to the best of the author's knowledge, there is no research that examines the difference in general well-being between native and overseas-born Australians, and its

correlation with their financial well-being. The costly and at times risky decision of an individual to move to another country is based on their expectations of significant income gain, in addition to other factors[29]. However, their well-being does not necessary improve in terms of both objective and subjective measures. For example, the expected increase in earnings depends on the probabilities and prospects of employment in both the country of origin and the country of destination (World Bank 2006a), which can postpone the achievement of the desired material benefits by immigrants. Similarly, as reported by Strumpel (1976), the subjective measure of economic welfare differs between various social groups. This suggests that an immigrant's own perception of economic welfare might change if their socioeconomic status in Australia is different from their status before migration.

Thus, subjective measures such as life satisfaction, financial satisfaction and financial prosperity can account for individual experience as well as reflect the different level of expectations of immigrants compared to native-born Australians. Financial difficulty in making the timely payment of basic bills and possible difficulty in raising a certain amount of cash on short notice are objective measures that allow reflection of the actual experience of financial problems (Buchler, Haynes & Baxter 2009). Using these measures should contribute to the analysis of the difference between the financial well-being of native and foreign-born Australians.

## 5.3 Data and methodology

The well-being of Australian immigrants was investigated by using the discrete dependent variable models and individual data from HILDA and LSIA surveys. Since these surveys have different purposes and questionnaires, not all variables in HILDA are available in LSIA, and vice versa. Therefore, the data and applied methods with respect to each survey are described separately in the following two subsections.

### 5.3.1 HILDA survey

Similarly to the analyses described in Chapter 2 and Chapter 3, data from the HILDA survey were used to identify the determinants of well-being of Australian residents**.** As before, the panel data analysis was applied to only two years of data, 2002 and 2006, which contain information about household finances.

[29] These factors are described in detail in Section 4.3 of the thesis.

General well-being in this research is expressed by individuals' own assessment of their satisfaction with life, consistent with most studies (Oswald 1997; Van Praag, Frijters & Ferrer-i-Carbonell 2003). This is the main dependent variable and is measured in HILDA on a scale from 0 to 10. Other dependent variables focus on the financial aspect of well-being. Specifically, financial prosperity measures individuals' self-assessed prosperity given current needs and financial responsibilities. Variables measuring financial satisfaction, inability to pay bills on time and raising $2000 in an emergency are the same as the dependent variables used by Buchler, Haynes and Baxter (2009). The list of dependent variables is as follows[30]:

**Table 5.1 Dependent variables (HILDA)**

| Subjective dependent variables | Range of measurement | Objective dependent variables | Range of measurement |
|---|---|---|---|
| Life satisfaction | 0-10 | Inability to pay bills | 1(Yes)/ 0(No) |
| Financial satisfaction | 0-10 | Raising $2,000 | 1-4 |
| Financial prosperity | 1-6 | | |

The discrete dependent variable models in this chapter are similar to the ones employed earlier. 'Inability to pay bills' and 'raising $2,000' in an emergency objectively describe the extent of financial difficulties faced by HILDA respondents. The 'inability to pay bills' on time is a dichotomous variable which is equal to 1 if an individual in the previous year had difficulty with paying basic bills on time, pawned something, went without meals or asked for financial help, and 0 otherwise. Therefore, the probability that an individual is not able to pay bills on time is described by the probit model as:

$$\Pr(Bills_{it} = 1 \mid X_{it}, \beta_1) = \Pr(\alpha + \beta_1 X_{it} + \varepsilon_{it} \geq 0) = \Phi(\alpha + \beta_1 X_{it}) \ , \qquad (5.1)$$

where $t$=1,2;

in addition, $\Phi(\varepsilon_{it})$ is the probit function, which is the standard normal cumulative distribution function; $Bills_{it}$ is the inability to pay bills on time by an individual $i$, which is equal to 1 for a positive answer to any of the seven questions relating to the 'inability to pay', and 0 otherwise; $X_{it}$ includes individual controls such as age, income and education.

[30] The complete description of the variables from HILDA Survey is presented in Table D.1 in Appendix D.

Similarly to the 'inability to pay bills', 'raising $2000' measures objective financial well-being. It describes potential financial difficulty in raising $2,000 should an emergency arise on a scale from 1 to 4. Other dependent variables – life satisfaction, financial prosperity and financial satisfaction – are also ordinal dependent variables but they represent an individual's own assessment of their well-being. Thus, the ordered dependent variable model with normal distribution was used for the analysis of an immigrant's life satisfaction, financial satisfaction, financial prosperity and their difficulty in raising $2,000:

$$\Pr(Wellbeing_{it} = M \mid X_{it}, \beta_1, \gamma) = 1 - \Phi(\gamma_M - \beta_1 X_{it}) \ , \qquad (5.2)$$

where $Wellbeing_{it}$ represents measures of well-being, such as life satisfaction, financial satisfaction, financial prosperity and difficulty in raising $2000 if urgently required, with:

$M = \gamma_M = 0,...,10$ for 'life satisfaction' and 'financial satisfaction' (1-lowest and 10-highest );

$M = \gamma_M = 1,...,6$ for 'financial prosperity'(1-lowest and 6-highest);

and $M = \gamma_M = 1,...,4$ for 'raising $2000'(1-lowest and 4-highest).

The sample was limited to household heads aged 15 or older with non-missing data on the country of origin. Similar to the definition given in Chapter 3, household heads are defined as household members who earn the highest income. This is consistent with the definition of householders by Plagnol (2011, p. 9), who argued that they 'are in a good enough financial situation to own or rent the place they reside in'. This limitation excludes dependent household members and focuses on the highest income earner who, in general, also has a bigger say in the household financial decisions. Accordingly, the financial well-being of these people should reflect the financial situation of the whole household.

The independent variables were similar to the ones used in the previous sets of analysis. In addition to income and wealth, which themselves serve as indicators of a household's financial situation, the independent variables included factors that could indirectly influence household finances such as age, gender, marital status, highest education level, the employment status of the household head, and the number of resident children in the household. These characteristics were also expected to show significance in the analysis of overall well-being. The summarised findings of Oswald (1997) indicated that happiness is

high among women, those who are married, well-educated, earning a high income and self-employed individuals, and low for unemployed people. According to Oswald, happiness is U-shaped in age, with the lowest levels registered for those in their 30s. The negative effects of having an additional child or adult in a household on financial, housing and leisure satisfactions detected by Van Praag, Frijters and Ferrer-i-Carbonell (2003) could also be evident in general satisfaction. Similarly, since general life satisfaction in their study was found to be highly dependent on financial satisfaction, which, in turn, was found to be lower for male respondents, this gender effect can also be present in general life satisfaction.

The well-being of households can also be affected by housing arrangements, the household location and its size. According to Headey, Warren and Wooden (2008), housing is the major component of asset portfolios in Australia. Similarly, Schellenberg and Feng (2005) named home ownership as a significant contributor to financial well-being. As a result, independent variables indicating whether the individual lives in their own home, is paying rent or living rent-free were included in the regression. The Major Statistical Region (MSR) of the dwelling could potentially influence the household head's job prospects and accordingly their well-being. Household size is also expected to influence the economic situation of the household. More people in the household means an increased financial burden on the household head and presumably a negative effect on the well-being of households (Walson 1991).

A few additional variables were applied to the immigrant-only data. They included the continent of their country of birth, the dominant religion in their home country and the number of years in Australia since migration. Continents rather than immigrants' countries of birth were used to represent immigrants' origin due to the large number of countries represented and the small number of observations for many of them[31]. The detailed description of independent variables from HILDA is in Table D.1 in Appendix D.

The examination of the well-being of Australian residents included a comparison of the life satisfaction and financial well-being of immigrant household heads with those of native-born household heads. Table 5.2 compares these and other characteristics of these sample groups from the HILDA survey. On average, foreign-born household heads are approximately four years older than their Australian-born counterparts, more educated but equally wealthy and earn a similar income. Immigrants have similar number of people residing in the same house but slightly fewer children under the age of 15. There are more males, fewer employed, more

[31] Out of 120 countries of birth, only 37 countries are represented by more than 30 observations.

house-owners and a higher percentage of married individuals among immigrants than among Australian-born people. Despite no difference in the earnings between these groups, immigrants are less likely to experience problems with paying basic bills, are more financially satisfied and have a higher level of self-reported financial prosperity. However, the higher level of financial well-being of immigrants does not imply that they experience greater life satisfaction. On the contrary, immigrants, in general, are less satisfied with their lives than their native-born counterparts, and this further justifies the need for detailed analysis of the causal relationship between income, financial well-being and overall well-being.

**Table 5.2 Characteristics of foreign-born and Australian-born household heads, HILDA (combined data for 2002 and 2006)**

| Characteristics | Australia-born | Foreign-born |
|---|---|---|
| Age | 46.56 | 50.67*** |
| | (17.40) | (16.25) |
| % male | 58.86 | 60.81* |
| % married (or de-facto) | 54.52 | 61.92*** |
| % employed | 69.32 | 64.01*** |
| Number of resident children | 0.52 | 0.47** |
| | (0.96) | (0.90) |
| Number of residents in household | 2.43 | 2.46 |
| | (1.42) | (1.37) |
| Disposable income for financial year ($) | 36,562 | 36,197 |
| | (27,611) | (30,291) |
| Household wealth ($) | 488,797 | 506,242 |
| | (927,079) | (998,157) |
| **Level of highest education achieved (%)** | | |
| No post-school qualification | 45.37 | 40.47*** |
| Bachelor degree or higher | 21.22 | 27.06*** |
| Other post-school qualification | 33.41 | 32.47 |
| **Housing arrangements (%)** | | |
| Own /pay mortgage | 65.77 | 68.59*** |
| Rent | 30.71 | 29.15** |
| Live rent free | 3.53 | 2.26*** |
| **Life satisfaction (scale 0-10)** | 7.80 | 7.75* |
| | (1.54) | (1.61) |
| **Financial well-being** | | |
| % experienced inability to pay bills | 24.67 | 19.30*** |
| Raising $2,000 (scale 1-4) | 1.70 | 1.68 |
| | (1.02) | (1.02) |
| Financial satisfaction (scale 0-10) | 6.24 | 6.34** |
| | (2.36) | (2.27) |
| Financial prosperity (scale 1-6) | 3.72 | 3.78*** |
| | (0.78) | (0.81) |
| Number of individuals | 10,523 | 3,101 |

**Notes:** Mean values are reported unless otherwise stated. Standard deviations are in parenthesis. The sample is limited to the household heads aged 15 or older who have non-missing data on country of origin. *** indicates a significant difference from a native-born Australian at at least the 1% level, ** at at least the 5 % level 0.05, * at at least the 10% level, when mean-comparison t-test is used.

As described in Chapter 2, a quarter of all immigrants surveyed in 2002 and 2006 were residents who arrived in Australia at least four decades ago. The arrival of the remaining three quarters was spread almost evenly from 1965 until the start of the survey, with the only substantial decrease in immigration (by half) in the late 1970s. More than half of the immigrants migrated as adults aged 20 or older. Finally, more than half of the foreign-born respondents originated from Europe and about quarter are from Asia.

### 5.3.2 LSIA survey

For the purposes of comparison and thoroughness, the above models were also applied to the second cohort from LSIA. The LSIA survey monitored three cohorts of immigrants; however, in this analysis only the second cohort was considered. This group was selected because of the detailed questionnaire used for interviews and the closeness of its survey period to the two years of the HILDA data. Although the immigrants in HILDA and LSIA arrived at different periods of time, their life satisfaction is likely to depend on the prevailing economic and social conditions at the time of their interviews. Hence, choosing similar survey periods allowed a comparison of the satisfaction of newly arrived immigrants as well as those who had been living in Australia for decades. LSIA2 observed immigrants interviewed shortly after their arrival from September 1999 to August 2000 and covered a wide variety of topics. LSIA1 had as many interview questions as LSIA2 for arrivals from September 1993 to August 1995 but it ended two years before the start of the HILDA survey in 2001. LSIA3, in contrast, included later arrivals between December 2004 and March 2005 but it had far fewer questions than LSIA1 and LSIA2. LSIA2 is thus the closest match to HILDA's 2002 and 2006 data.

Respondents from LSIA2 were also observed for two years, enabling a comparison with the results obtained using HILDA data. Because most of the LSIA questions were aimed at Primary Applicants for Australian Residency (hereafter referred to as Primary Applicants), the sample size for this part of the study was limited to 3,118 Primary Applicants whose former country of residence was different from Australia. This restriction makes this sample comparable to the immigrants in HILDA's household-heads-only sample.

Due to the absence of data on financial well-being, 'life satisfaction' is the only dependent variable in LSIA that matches closely the dependent variables in HILDA used for this

analysis. Similar to 'life satisfaction' in HILDA, it also expresses an individual's own assessment of their satisfaction with life in Australia, albeit on a scale from 0 to 5, whereas 10 is the maximum value in HILDA. Therefore, this ordered dependent variable can also be described by model (5.2).

The independent variables in LSIA are similar to the independent variables in HILDA with a few exceptions. First, due to the absence of questions on the value of household wealth in LSIA, this characteristic is captured by information about financial assets brought to Australia on arrival and transferred to and from Australia. Second, income in LSIA, unlike in HILDA, is not described by exact values but only by levels and rounded to the nearest thousand. Third, the number of resident children of school age or under in LSIA2 substitutes for the number of resident children under the age of 15 in HILDA. Finally, Major Statistical Regions controls used in HILDA are replaced by State of Residence controls in LSIA due to the absence of the former in LSIA. All the variables used from LSIA are described in Table D.2 in Appendix D.

Table 5.3 reports that, compared to immigrant household heads from HILDA, Primary Applicants surveyed under LSIA are younger by 14 years, have slightly fewer children, have a bigger household size and are less likely to be employed. The significant difference in age and the lower employment rate can be attributed to the LSIA sample consisting solely of newly arrived immigrants who had spent at most two and a half years in Australia. Due to the shorter residence of LSIA immigrants, higher percentage of Primary Applicants from this survey live with their extended families and friends rent-free (21 % compared to 2 % of household heads from HILDA) and only 20% of them, as opposed to 69% of comparable HILDA respondents, can afford their own housing. The percentage of male Primary Applicants is lower than the percentage of the male household heads, although the percentage of married individuals is not different. There is a higher proportion of bachelor or higher degree holders and a lower proportion of respondents without any post-school qualification among the Primary Applicants than among the immigrant household heads in HILDA (38% compared to 27%, and 36% compared to 41%, respectively). However, the household heads in HILDA have a higher percentage of those with other post-school qualifications (32% compared to 26% of Primary Applicants). Unlike in HILDA, most of the Primary Applicants in LSIA originate from Asia, with Europe having the second largest number of people migrating to Australia.

**Table 5.3 Comparison of characteristics of Primary Applicants from LSIA (2001–2002 data) and immigrant household heads from HILDA (2002 and 2006 data)**

| Characteristics | Primary Applicants (LSIA) | Immigrant household heads (HILDA) |
|---|---|---|
| Age | 36.83 | 50.67*** |
| | (13.11) | (16.25) |
| % male | 53.95 | 60.81*** |
| % married (or de-facto) | 63.37 | 61.92 |
| % employed | 44.93 | 64.01*** |
| Number of resident children | 0.31 | 0.47*** |
| | (0.79) | (0.90) |
| Number of residents in household | 3.56 | 2.46*** |
| | (1.75) | (1.37) |
| Annual income | 23,191 | |
| | (27,130) | |
| Financial assets arrived with ($) | 40,432 | |
| | (135,449) | |
| Financial assets transferred to AUS ($) | 16,095 | |
| | (141,440) | |
| Financial assets transferred from AUS ($) | 263 | |
| | (4,317) | |
| **Level of highest education achieved (%)** | | |
| No post-school qualification | 35.88 | 40.47*** |
| Bachelor degree or higher | 38.31 | 27.06*** |
| Other post-school qualification | 25.81 | 32.47*** |
| **Housing arrangements (%)** | | |
| Own /pay mortgage | 19.79 | 68.59*** |
| Rent | 59.14 | 29.15*** |
| Live rent free | 21.07 | 2.26*** |
| **Continent of origin (%):** | | |
| Asia | 44.07 | 20.03*** |
| Africa | 8.76 | 5.42*** |
| North America | 4.57 | 2.10*** |
| South America | 2.47 | 1.90* |
| Europe | 29.12 | 57.40*** |
| Oceania[a] | 3.40 | 13.06*** |
| Number of individuals | 6,236 | 3,101 |

**Notes:** Mean values are reported unless otherwise stated. Standard deviations are in parenthesis. The LSIA sample is limited to the Australian immigrants who were Primary Applicants for Australian Residency and who are aged 15 or older. The HILDA sample is limited to the household heads aged 15 or older who have non-missing data on country of origin. ***indicates a significant difference between Primary Applicants (LSIA) and household heads (HILDA) at at least the 1% level, ** at at least the 5 % level 0.05, * at at least the 10% level, when mean-comparison t-test is used.

[a]Includes 2798 Primary Applicants for Australian visa from LSIA who were born in Australia but whose former country of residence is different from Australia.

Most of the Primary Applicants' financial assets were brought into Australia during migration with only a small amount of less than $300 being transferred from the country after their migration. The average of their annual income is just above $20,000, which is well below the average disposable income received by Australian household heads interviewed under HILDA. This is consistent with the Primary Applicants having a lower employment rate than the household heads in HILDA.

## 5.4 Empirical results

The findings are presented in the following order in this chapter: first, using HILDA and LSIA data, what determines the well-being of Australian residents, and whether it differs for Australians born overseas, was examined; second, a similar examination was carried out for the financial well-being of Australian residents using HILDA data only; and finally, whether the detected differences in financial and general well-being can be explained by characteristics of immigrants' home countries was investigated by using the immigrant-only sample from HILDA and the LSIA sample. The Likelihood Ratio Chi-Square statistic was used to test whether at least one of the regression coefficients in the ordered dependent variable model was not equal to zero and all models passed this test. Similarly, the probit model used for the estimation of the inability to pay bills passed the Wald Chi-Square test. As before, all analyses were performed with STATA version 11.

### 5.4.1 General well-being of Australian residents

This analysis commenced with the comparison of living standards of LSIA immigrants in Australia with their standards of living in their home countries in the year prior to migration. Table 5.4 indicates that almost 80 per cent of Primary Applicants in the sample were at least able to meet all their basic needs in their home countries. This percentage is equally distributed between those who could afford spending on goods and services beyond basic needs and those who were just making ends meet (40 per cent each). The Australian lifestyle changes this pattern, putting the majority of Primary Applicants (55 per cent) into the middle group whose weekly available money is just enough to cover all basic expenses. *P*-value for the Person's chi-square test indicates that these differences in the distribution of Primary Applicants before and after migration are significant.

As shown in Table 5.4, immigrants do not benefit in terms of their relative well-being when they resettle, at least in accordance with Australian standards. In particular, the percentage of

those who were more than able to meet all basic needs in their home countries has fallen and the percentage of people who had difficulty in paying essential expenses remains almost unchanged.

**Table 5.4 Distribution of LSIA respondents by levels of living standards in Australia and living standards before migration (combined data for 2001–2002)**

| **Amount of money available each week after migration** | **Living standards in the former country of residence in the last 12 months before migration** | | | |
|---|---|---|---|---|
| | Less than able to meet all basic needs | Able to meet all basic needs | More than able to meet all basic needs | **Total** |
| Not enough to meet all basic needs | 462 | 460 | 210 | **1,132 (19.65%)** |
| Enough to meet all basic needs | 652 | 1,447 | 1,045 | **3,144 (54.57%)** |
| More than enough to meet all basic needs | 70 | 388 | 1,027 | **1,485 (25.78%)** |
| **Total** | **1,184 (20.55%)** | **2,295 (39.84%)** | **2,282 (39.61%)** | **5,761 (100%)** |

**Notes**: Results are based on the data from the LSIA survey. The sample is limited to the Australian immigrants who were Primary Applicants for Australian Residency and who are aged 15 or older. $P(\chi^2 \geq 994.14) = 0.00$ on 4 degrees of freedom.

This proposition was also tested by comparing the life satisfaction of Australian-born individuals with that of foreign-born Australian residents using HILDA data. The model (5.2) with a dummy, which is equal to 1 if an individual was born in Australia and 0 otherwise, was applied to the 2002 and 2006 data from the HILDA dataset. Table 5.5 presents the outcome of this estimate.

In agreement with the summary statistics in Table 5.2, these results suggest that foreign-born Australian residents are less satisfied with their lives than their native-born counterparts. There are other personal characteristics of Australian residents that determine their well-being. For example, people with post-school qualifications report lower levels of satisfaction than their less educated counterparts. Living in their own house makes people more satisfied than renting, but this satisfaction decreases with every additional adult added to the household. In addition, married household heads demonstrate a higher life satisfaction than their single counterparts. Participation in the workforce, a higher income and a higher level of wealth are also positively associated with an individual's life satisfaction. Men are less satisfied with life than women and, with age, this unhappiness increases. From the age of 37, however, the happiness level starts to increase, indicating that at this age it is at its minimum.

**Table 5.5 Factors affecting life satisfaction of Australian households, HILDA (panel data for 2002 and 2006)**

| Variables | Life satisfaction | Variables | Life satisfaction |
|---|---|---|---|
| Income | 0.0310*** | **Employment status (Employed=base case):** | |
| | (0.0119) | Unemployed | -0.238*** |
| Wealth | 0.000600*** | | (0.0568) |
| | (0.000113) | Not in labour force | -0.0835*** |
| Age | -0.0316*** | | (0.0281) |
| | (0.00320) | **Housing arrangements:** | |
| | | **(Own/Pay mortgage=base case)** | |
| Age squared | 0.000428*** | Rent | -0.0851*** |
| | (0.0000313) | | (0.0227) |
| Gender (1 if male) | -0.0461** | Rent free | -0.00444 |
| | (0.0197) | | (0.0515) |
| No. of children | 0.00713 | | |
| | (0.0152) | **Born in Australia** | **0.0370*** |
| No. of persons | -0.0303*** | | (0.0220) |
| | (0.0117) | Year (=1 if 2006) | 0.00768 |
| **Marital status (Married=base case):** | | | (0.0208) |
| Previously married | -0.397*** | | |
| | (0.0274) | Log likelihood | -23344 |
| Never been married | -0.286*** | Pseudo R -squared | 0.0235 |
| | (0.0292) | | |
| **Level of highest education:** | | | |
| **(No post-school qualification=base case)** | | | |
| Bachelor degree or higher | -0.0660*** | Observations | 13618 |
| | (0.0212) | | |
| Other post-school qualification | -0.114*** | | |
| | (0.0248) | | |

**Notes:** Results are based on the data from the HILDA survey. The dependent variable is life satisfaction. In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. The sample is limited to the household heads aged 15 or older who have non-missing data on country of origin. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

Many of the above effects on well-being are consistent with the findings in other countries (Oswald 1997). For example, the higher levels of happiness reported by women, employed and married individuals in HILDA reflect a general pattern worldwide. As is the case for other countries, the relation of the happiness of Australian household heads to their age is also U-shaped with a similar minimum point. Although the negative effect of having post-school education by HILDA respondents contradicts general findings, it is supported by the evidence obtained by Clark and Oswald (1996). They suggested that the satisfaction of British workers decreases with the increase in their educational attainment due either to higher aspirations induced by education or to other unknown factors. Similarly, in agreement with Van Praag, Frijters and Ferrer-i-Carbonell (2003), every additional member of a

household, except children, reduces the life satisfaction of a household head, possibly by affecting their financial, housing and leisure satisfactions.

The higher levels of happiness among respondents with a higher income, reported worldwide (Oswald 1997), are also evident among HILDA respondents. This suggests that the life satisfaction of immigrants should increase if their income in Australia is higher than what it used to be before migration. In fact, Table 5.2 shows that their average income is comparable with that of Australian-born residents. Nevertheless, immigrants are less satisfied with their lives, implying that some qualities of their well-being deteriorate after migration. The subsequent analysis concentrated on the financial aspects of the well-being of Australian residents and examined whether these aspects differ for those born outside Australia.

### 5.4.2 Financial well-being of Australian household heads

The analysis of the financial well-being of Australian residents was carried out by using both objective and subjective measures. Financial well-being can be objectively measured by an individual's material conditions, such as their ability to pay bills and their ability to raise $2,000 in an emergency. Using individual beliefs about their financial situation can provide a different perspective on their financial well-being. For example, recent economic research has suggested that people's well-being depends on their position relative to others around them (Clark & Oswald 1996; Easterlin 1995; Stutzer & Frey 2010). Hence, using people's own assessment of their financial satisfaction and financial prosperity, in addition to objective measures, should enable a more comprehensive analysis of their financial well-being.

Consequently, the next step of the analysis examined the determinants of the financial well-being of Australian residents represented by four dependent variables. As discussed in the Data and Methodology section, 'inability to pay bills' is a dichotomous variable which is equal to 1 if the household head experienced difficulties with paying essential expenses in the previous year; 'raising $2,000' measures their difficulty with raising $2,000 in an emergency; 'financial satisfaction' is an individual's own assessment of their satisfaction with their financial situation on a scale from 0 to 10; and 'financial prosperity' is self-assessed individual prosperity given current needs and financial responsibilities on a scale from 1 to 6. These variables are not available in LSIA, hence model (5.1) and model (5.2) were applied only to HILDA data. To investigate whether financial well-being differs between native-born and foreign-born household heads, these models were augmented with a dummy which is

equal to 1 if an individual was born in Australia and 0 otherwise. The findings are reported in Table 5.6.

**Table 5.6 Factors affecting inability to pay bills on time, difficulty in raising $2,000, financial satisfaction and financial prosperity of Australian households, HILDA (panel data for 2002 and 2006)**

| Variables | Inability to pay bills | Raising $2,000 | Financial satisfaction | Financial prosperity |
|---|---|---|---|---|
| Income | -0.0724*** | -0.179*** | 0.136*** | 0.173*** |
| | (0.0222) | (0.0151) | (0.0118) | (0.0136) |
| Wealth | -0.00489*** | -0.00547*** | 0.00221*** | 0.00328*** |
| | (0.000483) | (0.000286) | (0.000118) | (0.000130) |
| Age | 0.0187** | 0.0250*** | -0.0602*** | -0.0543*** |
| | (0.00813) | (0.00420) | (0.00317) | (0.00372) |
| Age squared | -0.000559*** | -0.000420*** | 0.000753*** | 0.000572*** |
| | (0.0000853) | (0.0000421) | (0.0000312) | (0.0000365) |
| Gender (1 if male) | -0.181*** | -0.248*** | 0.0651*** | 0.0224 |
| | (0.0473) | (0.0252) | (0.0194) | (0.0223) |
| No. of children | 0.0953*** | -0.0258 | -0.0259* | -0.0421** |
| | (0.0344) | (0.0195) | (0.0150) | (0.0175) |
| No. of persons | 0.0631** | 0.147*** | -0.0547*** | -0.0621*** |
| | (0.0272) | (0.0152) | (0.0115) | (0.0136) |
| **Marital status (Married=base case):** | | | | |
| Previously married | 0.574*** | 0.414*** | -0.302*** | -0.352*** |
| | (0.0666) | (0.0348) | (0.0269) | (0.0310) |
| Never been married | 0.314*** | 0.239*** | -0.124*** | -0.212*** |
| | (0.0663) | (0.0368) | (0.0287) | (0.0335) |
| **Level of highest education (No post-school qualification=base case):** | | | | |
| Bachelor degree or higher | -0.0762 | -0.101*** | 0.00982 | 0.0324 |
| | (0.0503) | (0.0270) | (0.0209) | (0.0241) |
| Other post-school qualification | -0.462*** | -0.449*** | 0.131*** | 0.362*** |
| | (0.0622) | (0.0331) | (0.0245) | (0.0280) |
| **Employment status: (Employed=base case)** | | | | |
| Unemployed | 1.122*** | 0.715*** | -0.758*** | -0.580*** |
| | (0.123) | (0.0690) | (0.0566) | (0.0661) |
| Not in labour force | 0.499*** | 0.449*** | -0.259*** | -0.235*** |
| | (0.0658) | (0.0361) | (0.0278) | (0.0318) |
| **Housing arrangements (Own/Pay mortgage=base case):** | | | | |
| Rent | 0.562*** | 0.545*** | -0.333*** | -0.376*** |
| | (0.0516) | (0.0287) | (0.0225) | (0.0261) |
| Rent free | -0.0649 | -0.0645 | -0.0364 | 0.0907 |
| | (0.123) | (0.0679) | (0.0507) | (0.0588) |
| **Born in Australia** | 0.0892 | -0.0676** | -0.0255 | -0.0647*** |
| | (0.0553) | (0.0290) | (0.0217) | (0.0250) |
| Year (=1 if 2006) | | -0.330*** | 0.223*** | 0.192*** |
| | | (0.0270) | (0.0206) | (0.0237) |
| Constant | -0.426* | | | |
| | (0.295) | | | |
| Log likelihood | -5208 | -10933 | -28192 | -12809 |
| Pseudo R -squared | | 0.150 | 0.0519 | 0.0953 |
| Observations | 11798 | 11977 | 13618 | 12087 |

**Notes:** Results are based on the data from the HILDA survey. The dependent variables are inability to pay bills on time, difficulty in raising $2,000 in an emergency, financial satisfaction and financial prosperity. In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. The sample is limited to the household heads aged 15 or older who have non-missing data on country of origin. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

Similarly to the general well-being of Australian residents, their financial well-being is positively associated with their income and wealth and negatively associated with adding an additional person to the household. As is the case for general well-being, greater levels of financial well-being are also experienced by employed and married individuals, and this well-being declines up to a certain age when it starts to increase. These turning points, however, vary for different measures of financial well-being. Specifically, the 'inability to pay bills' and 'raising $2,000' are highest at the age of 17 and 29 respectively and decline after that. This suggests that the initial increase in financial difficulty could be attributable to a young age and a lack of experience. Financial prosperity and financial satisfaction reach minimum values much later in life – at the ages of 48 and 40 respectively – and start to increase after these turning points. Plagnol (2011) suggested that the increase in financial satisfaction in old age could be explained by less emotional strain due to decreases in debt.

Men experience less financial difficulty with paying bills and raising cash in an emergency and higher financial satisfaction, in contrast with the findings by Van Praag, Frijters and Ferrer-i-Carbonell (2003). Levels of financial prosperity do not differ between male and female respondents. Having resident children under the age of 15 negatively affects households' financial prosperity and financial satisfaction and increases their odds of not paying bills on time but does not impact on their ability to raise adequate emergency funds when required. Paying rent, compared to owning a house, is associated with higher levels of financial difficulty, which could reflect the inability to buy a house rather than be caused by renting per se. Subsequently, paying rent is also associated with lower financial satisfaction and financial prosperity, which explains the negative effect on general life satisfaction.

Overall, the effects of personal characteristics on financial well-being are similar to the effects on general well-being, with a few exceptions. The first exception is that men experience higher financial satisfaction but report lower life satisfaction. This suggests that the factors which decrease their life satisfaction are not related to finances but to other issues which are strong enough to counter-balance men's financial advantages. Additionally, although every additional resident child decreases the financial well-being of the household head, this is not so important as to affect their overall life satisfaction. Another exception is that post-school education, mostly below bachelor degree, improves the financial well-being of Australian residents but reduces their general well-being. Its positive effect on financial well-being could be explained by better job prospects with a post-school qualification, although it is not always the case for bachelor or higher degree holders. This positive effect,

however, can be outweighed by the negative effects of education on other areas, such as unrealistically high expectations of housing conditions or not having sufficient leisure time (Van Praag, Frijters & Ferrer-i-Carbonell 2003). Similarly, although being born in a country other than Australia affects an individual's assessment of their life satisfaction, it matters for only two out of four measurements of their financial well-being.

The financial difficulty in raising $2,000 in an emergency and financial prosperity are the measurements which differ for Australians born overseas. Compared with the data in Table 5.2, the differences in the mean values of the inability to pay bills and financial satisfaction disappear once explanatory variables are included. The inclusion of regressors also shows that immigrants' difficulty in raising $2,000 exceeds that of Australian-born residents despite their equal mean values. Immigrants' assessment of their own prosperity is higher than that of Australian-born individuals, consistent with the data in Table 5.2. Unlike the estimation of life satisfaction, the estimation of financial satisfaction does not show any difference between immigrants and native-born household heads. Thus, a change in life satisfaction does not necessarily mean a change in financial satisfaction since overall well-being depends on the satisfaction experienced in various domains of life (Plagnol 2011).

According to the estimates of the objective measures of financial well-being in Table 5.6, immigrants do not have more financial problems with paying basic expenses such as food and electricity than Australian-born residents. Nevertheless, they might struggle more with raising emergency funds when required. Provided that there is no significant difference in the income and wealth between native and foreign-born Australians, this could mean that immigrants have fewer assets that could easily be converted to cash or that they do not have as many friends who can lend them money as native-born residents do. This is consistent with the findings that immigrants in the US have lower precautionary savings than US-born people (Amuedo-Dorantes & Pozo 2002) and, as argued in Chapter 3, it is also consistent with immigrant households in Australia saving less than comparable Australian-born households. In addition, higher living expenses in Australia reduce the importance of the absolute value of income and put more emphasis on its relative value. For example, the presumably higher income of immigrants to Australia relative to their income in their home country is just enough to cover their basic needs in Australia but not sufficient for raising adequate funds in an emergency.

The analysis of the subjective measures of financial well-being suggests that although immigrants' financial satisfaction is not different from that of native-born residents, immigrants report a higher level of financial prosperity. This seeming contradiction in the results may be caused by the increased income aspirations associated with a higher income in Australia. High enough aspirations can counterbalance a reported positive effect of income on an individual's financial satisfaction. Financial prosperity, on the other hand, is not affected, as it is possibly more related to immigrants' assessment of their prosperity based on their status before arrival in Australia.

Stutzer (2004) identified the adjustment of individuals to their past experience and their social comparison with others as the two key processes which form individual aspirations. Firstly, according to him, satisfaction depends on change and disappears with continued consumption. This means that HILDA immigrants have already adjusted to their improved financial position since arrival in Australia and hence their assessment of their own financial satisfaction is not different from that of Australian-born residents. At the same time, they are still making comparisons with the past and this is reflected in their view of their own financial prosperity.

Secondly, according to Stutzer, individual aspirations are also affected by people's relative position in society: having rich fellow residents increases one's aspirations (Stutzer 2004). Although income has a positive effect on both financial satisfaction and financial prosperity, equal levels of income between native and foreign-born Australians imply equal levels of financial satisfaction. In contrast, the higher self-assessed level of financial prosperity by immigrants reflects their comparison with their financial situation before migration. Hence, some characteristics of immigrants' home countries can also play an important role in determining their financial well-being in Australia. Immigrants carry their own customs and beliefs when they migrate to another country and this might be reflected in their assessment of their own financial situation.

### 5.4.3 Country-of-origin effects on general well-being and financial well-being

The findings described above show that self-assessed general well-being is higher for native-born Australians than for foreign-born Australians. This tendency is shown in only one component of financial well-being: immigrants experience greater financial difficulty in raising $2,000 for an emergency than their native-born counterparts. On the other hand, the levels of financial satisfaction of both groups and their ability to pay basic bills do not differ.

Moreover, financial prosperity is rated higher for foreign-born than for Australian-born residents. This suggests that differences in the general well-being of immigrants to Australia relative to native-born Australians could be driven by factors different from finances, such as the characteristics of immigrants' home countries. Home-country effects can also be present in immigrants' assessment of their financial situation; hence, the presence of these effects was investigated for both the general well-being and the financial well-being of immigrants. HILDA data were applied to both analyses, whereas the limitation of the LSIA data permitted only an analysis of immigrants' general well-being.

#### 5.4.3.1 Country-of-origin effects on life satisfaction and financial well-being of immigrant household heads from HILDA

First, it was investigated whether home-country effects could contribute to the difference in general well-being and components of financial well-being between Australian-born and non-Australian-born residents by using HILDA data. For this purpose, model (5.2) was applied to the immigrant-only sample with 'raising $2,000', 'financial prosperity' and 'life satisfaction' as variables of interest. Additional independent variables included the continent of the immigrant's home country and the length of their residence in Australia. Continent of origin is supposed to capture home-country effects and the duration of Australian residence is supposed to account for the degree of assimilation with the local population. The results of this exercise are reported in Table 5.7.

According to this table, the effect of personal characteristics on immigrants' well-being is similar to those for all Australian residents, with a few exceptions. The first exception is that, although immigrants' well-being and their financial well-being are both U-shaped in age, their minimum points, on average, are reached later in life than for whole population. For example, the greatest difficulty in raising emergency funds is experienced by 38-year-old immigrants (9 years later than that experienced by an average Australian resident), whereas the least financially prosperous and the least satisfied with their lives are immigrants aged 50 and 40 respectively (compared to 48 and 37 year-old Australian residents). Similarly, a positive association of never-married status compared to being married with an ability to raise $2,000 and its negative association with financial prosperity disappear when the sample is limited to immigrants. These two exceptions could probably be explained by immigrants being, on average, older and having a higher percentage of married individuals than native-born Australians, who dominate the HILDA sample. Another exception is that, unlike in the average Australian household, the number of resident children in an immigrant household

does not affect the household's financial prosperity. In addition, the absence of the previously detected negative effect of having a bachelor degree or higher on the difficulty in raising $2,000 and life satisfaction could be explained by the lower percentage of the holders of this type of degree among immigrants than among Australian-born people. Similarly, the number of household members and paying rent compared to living in one's own house do not play any roles in immigrants' own assessment of their life satisfaction. This, however, is not the case when Australian-born residents are added to the sample.

The life satisfaction of immigrants does not depend on income but is still dependent on household wealth. The independence of income is unexpected as higher income increases immigrants' ability to raise $2,000 in an emergency and their own assessments of their financial prosperity. The absence of income effect is even more surprising in view of the previously detected positive role that income plays in the life satisfaction of an average Australian household head. This finding underlines the importance of non-monetary factors in accessing immigrants' well-being, albeit greater wealth is still positively associated with their life satisfaction. Considering the similar mean values of wealth reported by Australian-born and foreign-born individuals but the lower life satisfaction of the latter group, immigrants require a higher value of wealth to be satisfied with their lives in Australia. Their greater need for wealth could be attributed to being new to the country and, accordingly, having a greater need for capital outlay such as a house or a car. The wealth effect on immigrants' life satisfaction, however, is not as strong as that on their financial well-being. Thus, the lower well-being of immigrants relative to native-born Australians cannot be caused solely by a change in immigrants' financial situation but would also be due to other immigrant-specific factors.

**Table 5.7 Factors affecting difficulty in raising $2,000, financial prosperity and life satisfaction of immigrants to Australia when continents of origin are controlled for, HILDA (panel data for 2002 and 2006)**

| Variables | Raising $2,000 | Financial prosperity | Life satisfaction |
|---|---|---|---|
| Income | -0.100*** | 0.124*** | 0.0271 |
| | (0.0287) | (0.0249) | (0.0219) |
| Wealth | -0.00978*** | 0.00339*** | 0.000425* |
| | (0.000930) | (0.000267) | (0.000220) |
| Age | 0.0280*** | -0.0669*** | -0.0382*** |
| | (0.0103) | (0.00909) | (0.00760) |
| Age squared | -0.000370*** | 0.000663*** | 0.000483*** |
| | (0.0000995) | (0.0000862) | (0.0000717) |
| Gender (1 if male) | -0.283*** | 0.0136 | -0.0861** |
| | (0.0550) | (0.0480) | (0.0417) |
| No. of children | -0.0471 | -0.0512 | 0.0337 |
| | (0.0450) | (0.0394) | (0.0334) |
| No. of persons | 0.153*** | -0.0552* | -0.0107 |
| | (0.0349) | (0.0307) | (0.0251) |
| **Marital status (Married=base case):** | | | |
| Previously married | 0.467*** | -0.334*** | -0.378*** |
| | (0.0731) | (0.0642) | (0.0555) |
| Never been married | 0.0651 | -0.0338 | -0.180*** |
| | (0.0909) | (0.0804) | (0.0696) |
| **Level of highest education (No post-school qualification=base case):** | | | |
| Bachelor degree or higher | -0.0220 | 0.0741 | -0.0152 |
| | (0.0594) | (0.0517) | (0.0453) |
| Other post-school | -0.315*** | 0.299*** | -0.139*** |
| qualification | (0.0686) | (0.0580) | (0.0508) |
| **Employment status(Employed=base case):** | | | |
| Unemployed | 0.803*** | -0.631*** | -0.489*** |
| | (0.161) | (0.151) | (0.120) |
| Not in labour force | 0.498*** | -0.210*** | -0.141** |
| | (0.0773) | (0.0662) | (0.0586) |
| **Housing arrangements(Own/Pay mortgage=base case):** | | | |
| Rent | 0.339*** | -0.355*** | -0.0371 |
| | (0.0645) | (0.0546) | (0.0474) |
| Rent free | -0.0736 | 0.0194 | -0.154 |
| | (0.175) | (0.146) | (0.128) |
| **Continents (Oceania=base case):** | | | |
| Asia | 0.0597 | -0.0113 | -0.146** |
| | (0.0920) | (0.0801) | (0.0695) |
| Africa | 0.202 | -0.274** | -0.136 |
| | (0.128) | (0.111) | (0.0961) |
| North America | 0.0901 | -0.0977 | 0.0932 |
| | (0.200) | (0.163) | (0.142) |
| South America | 0.304* | -0.239 | -0.183 |
| | (0.185) | (0.169) | (0.145) |
| Europe | -0.0150 | 0.00435 | -0.0721 |
| | (0.0828) | (0.0706) | (0.0624) |
| Years in Australia | -0.00567** | -0.000051 | 0.00348** |
| | (0.00228) | (0.00190) | (0.00167) |
| Year (=1 if 2006) | -0.217*** | 0.115** | 0.0185 |
| | (0.0571) | (0.0486) | (0.0425) |
| Log likelihood | -2326 | -2914 | -5397 |
| Pseudo R -squared | 0.153 | 0.0904 | 0.0243 |
| Observations | 2635 | 2670 | 3091 |

**Notes:** Results are based on the data from the HILDA survey. The dependent variables are difficulty in raising $2,000 in an emergency, financial prosperity and life satisfaction. In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. The sample is limited to the immigrant household heads aged 15 or older who have non-missing data on country of origin. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

Immigrants' well-being also depends on the duration of their residence in Australia. For example, immigrants who have spent a longer time in Australia have higher levels of life satisfaction and less difficulty in raising $2,000 in an emergency. This indicates that, as time passes, there is assimilation with the native-born population in terms of these two measures of well-being. The self-assessment of immigrants' own financial prosperity, in contrast, remains unchanged, suggesting that even after long time they are still making comparisons of their current financial status with their past status.

This country-of-origin effect is evident only for immigrants from Africa and Asia, and marginally for immigrants from South America. In particular, financial prosperity is lower for people who have migrated from Africa relative to the base case of Oceania. However, their ability to raise $2,000 and their life satisfaction do not differ from those of the base group. Immigrants from South America report similar levels of life satisfaction and financial prosperity to those of immigrants from Oceania, but they have slightly higher difficulty in raising $2,000 in an emergency. The only group of immigrants who have significantly lower satisfaction with life compared to the base group come from Asia, despite there being no difference in the components of their financial well-being.

The robustness of these findings can be checked by including other variables which could potentially affect immigrants' well-being and could also characterise their countries of origin. The different backgrounds of immigrants can be described not only by the location of their home country but also by their religion. Furthermore, religious denomination, as argued by Guiso, Sapienza and Zingales (2006), can be treated as exogenous due to delayed cultural adjustment, and this can reduce the risks of the reverse causality problem. Hence, the dominant religion in the country of origin was added to the previous regressions, and the updated results are presented in Table 5.8.

The inclusion of this variable confirms the results for immigrants from Africa but not from other continents. Specifically, the sign and significance of coefficient on African continent for the assessment of immigrants' own financial prosperity does not change. What is more, originating from this continent is now also negatively associated with the ability to raise $2,000, while this is no longer applicable to immigrants from the South American continent. This confirms the financial disadvantage of household heads originated from Africa relative to their counterparts from Oceania, which is expressed not only in their lower financial prosperity but also in greater difficulty in raising funds in an emergency. In contrast, the life

satisfaction of immigrants from Asia is no longer lower than the life satisfaction of immigrants from the Pacific Islands, although there is a marginally significant difference in the levels of financial prosperity. Life satisfaction, in general, does not differ between migrants from different continents.

Religion does not show any significant effect on immigrants' ability to raise $2,000 and their life satisfaction, but immigrants following Islam, Buddhism or Hinduism report higher financial prosperity than Christians. This is not consistent with the findings reported in Chapter 3 that Muslims and Buddhists have lower saving rates than Christians; however, the dominance of Christians among the respondents and the small size of the sample preclude further analysis. Despite religion having no influence on life satisfaction, it absorbs the negative effect of the Asian continent detected in Table 5.7, indicating that this negative coefficient is caused by Asia having the most diverse religious environment. In particular, as can be seen in Table D.3 in Appendix D, immigrants from Asia, unlike immigrants from other continents, have representatives from all religious groups. Additionally, Asian immigrants have the smallest percentage of Christians, who represent the majority of the Australian population and are used as the base case. All the migrants from Oceania and most of the migrants from Africa, in contrast, are from countries following the Christian religion and, accordingly, have similar levels of life satisfaction in both Table 5.7 and Table 5.8. Their ability to raise spare cash and their levels of financial prosperity, however, are different even when accounting for their home countries' dominant religion.

**Table 5.8 Factors affecting difficulty in raising $2,000, financial prosperity and life satisfaction of immigrants to Australia when continents of origin and home country's religion are controlled for, HILDA (panel data for 2002 and 2006)**

| Variables | Raising $2,000 | Financial prosperity | Life satisfaction |
|---|---|---|---|
| Income | -0.103*** | 0.124*** | 0.0226 |
| | (0.0289) | (0.0250) | (0.0220) |
| Wealth | -0.00977*** | 0.00343*** | 0.000453** |
| | (0.000933) | (0.000268) | (0.000220) |
| Age | 0.0286*** | -0.0678*** | -0.0384*** |
| | (0.0104) | (0.00911) | (0.00761) |
| Age squared | -0.000376*** | 0.000673*** | 0.000484*** |
| | (0.0000997) | (0.0000864) | (0.0000717) |
| Gender (1 if male) | -0.277*** | 0.00487 | -0.0871** |
| | (0.0552) | (0.0482) | (0.0418) |
| No. of children | -0.0458 | -0.0529 | 0.0332 |
| | (0.0451) | (0.0395) | (0.0334) |
| No. of persons | 0.153*** | -0.0570* | -0.0130 |
| | (0.0350) | (0.0307) | (0.0252) |
| **Marital status (Married=base case):** | | | |
| Previously married | 0.469*** | -0.340*** | -0.381*** |
| | (0.0731) | (0.0643) | (0.0555) |
| Never been married | 0.0656 | -0.0308 | -0.180*** |
| | (0.0910) | (0.0805) | (0.0696) |
| **Level of highest education(No post-school qualification=base case):** | | | |
| Bachelor degree or higher | -0.0238 | 0.0784 | -0.0146 |
| | (0.0594) | (0.0518) | (0.0454) |
| Other post-school | -0.311*** | 0.301*** | -0.131** |
| qualification | (0.0688) | (0.0582) | (0.0511) |
| **Employment status(Employed=base case):** | | | |
| Unemployed | 0.806*** | -0.635*** | -0.496*** |
| | (0.161) | (0.151) | (0.120) |
| Not in labour force | 0.505*** | -0.222*** | -0.143** |
| | (0.0775) | (0.0664) | (0.0587) |
| **Housing arrangements:** | | | |
| Rent | 0.337*** | -0.359*** | -0.0449 |
| | (0.0647) | (0.0548) | (0.0475) |
| Rent free | -0.0731 | 0.00936 | -0.159 |
| | (0.175) | (0.146) | (0.129) |
| **Continents (Oceania=base case):** | | | |
| Asia | 0.151 | -0.210* | -0.144 |
| | (0.129) | (0.116) | (0.101) |
| Africa | 0.257* | -0.392*** | -0.159 |
| | (0.135) | (0.117) | (0.101) |
| North America | 0.0857 | -0.0944 | 0.0909 |
| | (0.200) | (0.164) | (0.142) |
| South America | 0.302 | -0.237 | -0.184 |
| | (0.185) | (0.169) | (0.145) |
| Europe | -0.0184 | 0.0116 | -0.0682 |
| | (0.0828) | (0.0707) | (0.0624) |
| **Religion (Christian=base case):** | | | |
| Muslims | -0.149 | 0.341*** | 0.0589 |
| | (0.132) | (0.118) | (0.0998) |
| Buddhists | -0.0380 | 0.239* | 0.0434 |
| | (0.153) | (0.138) | (0.117) |
| Chinese | -0.197 | 0.0728 | -0.223 |
| Universists | (0.217) | (0.182) | (0.161) |
| Hindus | -0.187 | 0.318** | 0.0745 |
| | (0.181) | (0.158) | (0.137) |
| Non-religious | -0.0673 | 0.0210 | -0.252* |
| | (0.182) | (0.161) | (0.140) |
| Years in Australia | -0.00553** | -0.000498 | 0.00329** |
| | (0.00229) | (0.00191) | (0.00167) |
| Year (=1 if 2006) | -0.221*** | 0.117** | 0.0151 |
| | (0.0572) | (0.0486) | (0.0426) |
| Log likelihood | -2325 | -2910 | -5394 |
| Pseudo R -squared | 0.153 | 0.0917 | 0.0249 |
| Observations | 2635 | 2670 | 3091 |

**Notes:** Results are based on the data from the HILDA survey. The dependent variables are difficulty in raising $2,000 in an emergency, financial prosperity and life satisfaction. In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. The sample is limited to immigrant household heads aged 15 or older who have non-missing data on country of origin. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

#### 5.4.3.2 Country-of-origin effect on life satisfaction of Primary Applicants from LSIA

The approach described in the previous subsection was also applied to the 'life satisfaction' from LSIA. Accordingly, model (5.2) was first augmented by additional controls for immigrant's continents of origin and applied to the sample of Primary Applicants. Years of Australian residence are not relevant in this context since all LSIA respondents, unlike immigrants from HILDA, were new to the country at the time of the survey, and their first interview was carried out just five or six months after their arrival. At the next stage, dominant religion in an immigrant's home country was added to the regression. Due to the similarity of estimates at both stages, only results with both continent of origin and religion controls are presented in Table 5.9[32].

In contrast with the immigrant sample from HILDA, the analysis using LSIA data found that income has a significant positive effect on the life satisfaction of Australian immigrants. Different definitions of income in both surveys suggest that it is not the absolute value of income that matters but whether a person belongs to a particular income group. Financial assets transferred to Australia after arrival are positively associated with immigrants' life satisfaction, but assets arrived with and those transferred from Australia are not associated with life satisfaction. The perceived insignificance of the assets arrived with in Australia could be attributed to the individuals adjusting to the consumption level provided by these assets, and consequently developing higher aspirations. Assets transferred to Australia increase immigrants' satisfaction by providing fresh stimulus, whereas the low value of assets transferred out of the country, as reported in Table 5.3, does not allow for any definite conclusion.

[32] The outcomes of the model controlling for continent of origin, but not home country's religion, are presented in Table D.4 in Appendix D.

**Table 5.9 Factors affecting life satisfaction of immigrants to Australia when continents of origin and home country's religion are controlled for, LSIA (panel data for 2001–2002)**

| Variables | Life satisfaction | Variables | Life satisfaction |
|---|---|---|---|
| | | **Housing arrangements: (Own/Pay mortgage=base case)** | |
| Income | 0.0415*** | Rent | -0.0426 |
| | (0.00582) | | (0.0439) |
| Fin. assets arrived with | -0.000268 | Rent free | 0.120** |
| | (0.00135) | | (0.0600) |
| Fin. assets transferred to AUS | 0.00289* | **Continents (Oceania=base case):** | |
| | (0.00158) | Asia | 0.00459 |
| Fin. assets transferred from AUS | 0.00716 | | (0.0959) |
| | (0.0222) | Africa | 0.0687 |
| Age | -0.0213*** | | (0.100) |
| | (0.00749) | North America | 0.0608 |
| Age squared | 0.000294*** | | (0.110) |
| | (0.0000833) | South America | -0.0649 |
| Gender (1 if male) | 0.0252 | | (0.125) |
| | (0.0347) | Europe | -0.0788 |
| No. of children | -0.0368 | | (0.0891) |
| | (0.0233) | | |
| No. of persons | -0.00267 | **Dominant religion in country of origin: (Christian=base case)** | |
| | (0.0107) | Muslims | -0.165*** |
| **Marital status (Married=base case):** | | | (0.0516) |
| Previously married | -0.0522 | Buddhists | -0.218*** |
| | (0.0613) | | (0.0719) |
| Never been married | -0.105** | Chinese | -0.239** |
| | (0.0435) | Universists | (0.0944) |
| **Level of highest education: (No post-school qualification=base case)** | | Hindus | -0.323*** |
| Bachelor degree or higher | -0.108** | | (0.0882) |
| | (0.0429) | Non-religious | -0.564*** |
| Other post-school qualification | -0.182*** (0.0408) | | (0.0686) |
| | | Year (=1 if 2001) | -0.00126 |
| **Employment status (Employed=base case):** | | | (0.0352) |
| Unemployed | -0.280*** | | |
| | (0.0697) | Log likelihood | -5061 |
| Not in labour force | -0.0369 | Pseudo R -squared | 0.0354 |
| | (0.0499) | Observations | 5641 |

**Notes:** Results are based on the data from the LSIA survey. The dependent variable is life satisfaction. In addition to the coefficients reported above, the regressions also include Australian State of Residence controls, which are not reported due to low significance. The sample is limited to Primary Applicants for Australian Residency aged 15 or older who have non-missing data on country of origin. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

The effects of other personal characteristics of LSIA immigrants on their life satisfaction are similar to those detected earlier in this study and in other studies. The relationship between

life satisfaction and age is U-shaped, with minimum satisfaction reached at the age of 36, four years earlier than for HILDA immigrant respondents. Similarly to immigrant household heads in HILDA, educated Primary Applicants in LSIA have lower life satisfaction and employed Primary Applicants have higher life satisfaction than their less educated and unemployed counterparts respectively. Being male or female, and being previously married compared to being currently married, however, do not cause a significant difference in life satisfaction, unlike for immigrants in HILDA. Consistently with HILDA though, Primary Applicants who have never been married have lower life satisfaction than their married counterparts. This could be explained by the significant average age difference in both samples, with the majority of the LSIA sample being young immigrants. Living rent free compared to living in one's own house is positively associated with the life satisfaction of immigrants from LSIA, but not from HILDA, since only 2 per cent of those from the latter survey live rent-free in somebody else's house. A higher percentage (21 per cent) of relatively recent LSIA immigrants live with friends or extended family, either for cost saving or because they are still not familiar with the Australian housing market.

As in HILDA, being from the Asian continent is initially negatively associated with the life satisfaction of LSIA immigrants (Table D.4 in Appendix D) but, as reported in Table 5.9, it loses its significance once the home country's religion is also controlled for. Unlike the earlier findings from the HILDA data, however, immigrants from countries following any religion different from Christianity, as well as those from non-religious countries, have lower life satisfaction than immigrants from Christian countries. This suggests that having a culture different from the dominant culture in the host country negatively affects the life satisfaction of immigrants, at least in their first few years. This effect is not evident for immigrants from HILDA, possibly due to the majority of them living in Australia for a long time.

## 5.5 Conclusions

This chapter has contributed to the growing research on the determinants of well-being. In particular, the research concentrated on the well-being of Australian immigrants and investigated whether it differs from the well-being of other Australians. Well-being in this research is expressed by a self-assessed measure of an individual's own life satisfaction. This subjective measure is supposed to capture an individual's perception of their situation and their experience which could differ for immigrants due to the challenges of their resettlement.

Among the various domains of well-being, this research has concentrated on its financial component. Since the prospect of earning a higher income is one of the main incentives for an individual's decision to migrate to another country, the financial well-being of immigrants should be highly correlated with their general well-being. Financial well-being is normally measured by the monetary values of individuals' possessions that are often expressed by income or wealth. This research has measured it differently by using both objective and subjective measures. Specifically, a migrant's inability to pay bills and difficulty in raising $2,000 in an emergency were the objective measures, whereas financial satisfaction and financial prosperity were subjectively assessed by individuals on an ascending scale.

The findings show a lower level of life satisfaction of Australian immigrants compared to native-born Australians, despite there being no significant difference in income and wealth between these two groups. This finding is supported by the reported lack of improvement in the relative living conditions of immigrants yet it is not necessarily reflected in their perceived financial well-being. For example, the level of financial satisfaction of immigrants does not differ from that of native-born Australians, and the level of their self-assessed financial prosperity is even higher. In terms of material conditions, even though immigrants' difficulty in paying basic bills does not differ from that of other Australians, they have more problems with raising spare cash in an emergency.

In addition to common factors such as homesickness and starting from scratch in a new country, the different perceptions of success and financial difficulties in immigrants' home countries may also explain why their perceived well-being is lower than that of other Australians. Thus, this study also tested for the presence of home-country effects on immigrants' general and financial well-being. It was found that immigrants' cultural background, represented by the dominant religion in their home country, is one of the crucial factors affecting their life satisfaction. In particular, the life satisfaction of immigrants from countries following Christianity is higher than that of immigrants from other countries. Hence, originating from a country following a religion different from Christianity – the dominant religion in Australia – could contribute to the factors reducing the life satisfaction of immigrants, at least in their first few years in Australia.

Despite having no influence on their general well-being, originating from a particular continent can impact on immigrants' financial well-being in Australia. Specifically, African migrants report a lower ability to raise spare cash in an emergency and lower financial

prosperity than immigrants from the Pacific Islands. This difference cannot be attributed to a different religious background as all the immigrants from the Pacific Islands and the majority of the immigrants from Africa have a Christian background. The self-assessment of immigrants' own financial prosperity, on the other hand, tends to be higher for those from countries following Islam, Buddhism and Hinduism.

Thus, there is no definite answer to the question of whether migrants benefit or not when they move to a more developed country. It is assumed that individuals become better off after they migrate to a country with higher income levels than their home countries. However, it is often not considered that immigrants' own perception of their economic situation can change with such a life-changing experience as relocation to another coutry. For example, the adaptation to their new income and consumption levels and their social comparisons may cause reappraisal of their values and increase their income aspirations. The cultural shock experienced by new settlers can also negatively affect immigrants' life satisfaction, irrespective of their country of origin. Furthermore, among all immigrants, African immigrants seemed to be the most financially disadvantaged. Hence, a higher income does not necessarily cause an improvement in an immigrant's sense of general well-being nor their financial well-being, and other factors also need to be considered for relevant policy recommendations.

It is the nature of human beings to constantly seek improvement in their well-being. The goal of migrants who leave behind their homes, friends and sometimes families is to find a better life in another country. Nevertheless, some costs of migration might not be so obvious. These hidden costs, in addition to foreseen difficulties, could outweigh the positive effects of migration on immigrants' well-being in a newly adopted country.

# CHAPTER 6. CONCLUSIONS

The economies of industrialised countries are increasingly dependent on immigrant flows. Australia is one of these countries, with an immigrant population exceeding 25 per cent (DIAC 2011). Furthermore, the growing number of people worldwide living outside their countries of origin is projected by the World Bank (2006b) to further increase. This mostly applies to migration from developing to more prosperous countries such as Australia. Although, as reported by DIAC (2011), migrant unemployment rates in Australia are lower than in other countries, with the majority of new migrants contributing positively to the Australian Government budget, other aspects of immigrants' financial performance may also influence the Australian economy. The primary goal of this thesis was to examine the components of the financial behaviour of immigrants to Australia and compare it with the financial behaviour of native-born Australians. Whether immigrants' country-of-origin characteristics affect their financial decisions after migrating to Australia was also investigated. The role of the Australian Government on immigrants' financial behaviour in Australia, through its immigration policies, and the role of the governments in immigrants' home countries, through the quality of their institutions, were also analysed.

Consequently, this thesis addressed the following research questions:

1. What determines the level of financial risk-taking of Australian residents, and what is the role of home-country institutions in explaining any difference in propensity to take financial risk between Australian-born and non-Australian-born residents? (Chapter 2)

2. Does being born overseas, among other factors, affect Australians' personal saving rates, and do immigrants' home countries influence their saving habits after migration to Australia? (Chapter 3)

3. What constitutes immigrants' willingness and ability to remit, and what is the effect of Australian Government policies on the outflow of remittances from the country? (Chapter 4)

4. What determines the well-being of Australian residents, and is it different for Australians born overseas? How is the general well-being of immigrants related to their financial well-being? (Chapter 5)

The analysis of the financial behaviour of immigrants to Australia began with the investigation of their propensity to take financial risk. An increasing number of Australians are born overseas, so understanding the factors affecting their decisions to participate in Australian financial markets is crucial for the country's financial development. The findings reported in Chapter 2 reveal that immigrants' propensity to take financial risk is lower than that of native-born Australian residents. For those immigrants who were old enough when they arrived in Australia, this difference could be attributed to their mistrust in institutions based on their experience before migration. The persistence of this institutional influence varies for people from different generations: from a minimum of seven years for relatively recent arrivals to more than two decades for those who arrived in the 1980s or earlier. This applies to both immigrants' equity investments and their self-measured financial risk-taking. However, home institutions affect immigrants' investment decisions differently from the way they affect immigrants' self-reported ability to take financial risk. Moreover, the effect of home institutions is not always evident when using the self-assessment measure of financial risk. This suggests that these two measures cannot be used interchangeably.

As reported in Chapter 3, the research examined another important aspect of immigrants' financial behaviour: their saving habits. Higher household savings are associated with greater levels of business investment and a well-developed financial system. According to the findings, the household saving rates of Australian immigrants are lower than the saving rates of their Australian-born counterparts at both household and individual levels. In addition to a higher income or lower wealth accumulation, a better institutional quality in an immigrant's home country is also positively associated with their saving behaviour. Hence, the lower saving rates of immigrants could be attributed to a poor institutional environment in their countries of origin. Contrary to expectations, the national saving rates in immigrants' home countries and immigrants' saving rates in Australia were found to be negatively correlated, although only in an extended sample of all household members. This suggests that immigrants from high saving countries change their saving habits after they migrate, possibly due to the high level of social security in Australia reducing the need for saving. On the other hand, the HILDA data used for this analysis do not have information about remittances to the country of origin, which should be counted as an expense in the saving rate calculation. This limitation could thus overestimate the saving rates – defined as the proportion of disposable income after all expenses to total disposable income – of those immigrants who transfer money to their home countries. Hence, high saving rates of these immigrants could imply a

high need for financial assistance of their family members still in their home country, which could also indicate the low level of the country's economic development characterised by low national saving rate.

The positive effect of the institutional environment on an immigrant's propensity to take financial risk and their saving behaviour described in Chapter 2 and Chapter 3 demonstrates the benefits of formal government reform for financial development. Should the government in an immigrant's home country have carried out institutional reform before their emigration, their participation in the Australian financial markets might be more active. This active participation, in turn, would benefit the Australian economy. Although institutional constraints might not be evident at first and can unfold over generations, the alteration of the formal institutional environment in a host country can overcome this legacy. Hence, the Australian Government can use its policies as an instrument to enhance the financial prosperity of the country. Immigration policies are extremely important in this context as they are the first tool used by the government to screen potential Australian residents. For example, applicants for the Skilled Visa are selected based on their possible contribution to the Australian economy, mostly measured by their prospective earnings.

Although, as indicated by DIAC (2011), recent skilled migrants to Australia earn on average $3,000 more a year than the average Australian, their need to support their families living in their countries of origin reduces the proportion of their income that goes to savings. The analysis of the remittances of immigrants to Australia reported in Chapter 4 complemented the analysis of their saving behaviour reported in Chapter 3. Not accounting for remittance outflows can result in overstating gains from international migration, and knowing the factors that affect outward remittances can assist in creating more accurate forecasts of outward financial flows and assist in policy-making. The wider spectrum of questions relevant to immigrants in LSIA, compared to HILDA, allowed the estimation of their remitting behaviour. Hence, the research reported in Chapter 4 concentrated on what constitutes immigrants' willingness and ability to remit.

The comparison of the estimates for two cohorts arrived in Australia before and after the 1990s immigration reforms revealed that the effects of being on a certain type of entry visa changed after the reforms, but only with respect to remitted amounts. The probability of remitting, although different between representatives holding different types of visas, has not been affected by these recent reforms because it depends rather on other factors, such as

immigrants' need to support their families still in their home countries. The amount of remittance, on the other hand, depends on an immigrant's financial situation and hence, on their reason to migrate to Australia represented by their type of entry visa. Hence, after the amendments to the skilled migration points test introduced in 1999, the remitted amounts increased as a result of changes in the characteristics of the average independent applicant. The possible reason is that the new points test **s**creened out those applicants who did not meet the tighter entry requirements and selected more qualified candidates with a higher earning potential than the earlier cohort.

The improved financial situation of recent immigrants compared to immigrants who arrived earlier suggests that immigrants to Australia are becoming better off. However, data for various developed countries including Australia show that their immigrants are less wealthy than their native-born residents, which, according to the existing research, can diminish immigrants' well-being. This contradiction raised the necessity for the analysis of immigrants' well-being and its correlation with their financial situation. The analysis of the determinants of the well-being of Australian residents, defined as their satisfaction with life, and whether it is different for people born overseas is reported in Chapter 5. Both the objective measures of financial well-being**,** namely, inability to pay bills and raising cash in an emergency, and the subjective measures, namely, financial satisfaction and financial prosperity, were used for this purpose. The findings for the immigrant-only data from HILDA were compared with those for the LSIA data.

According to the empirical findings described in Chapter 5, immigrants to Australia are less satisfied with their lives than their Australian-born counterparts. The similar levels of income and wealth and, accordingly, the similar levels of financial satisfaction and difficulty in paying bills of these two groups suggest that other factors, apart from absolute income increase, do matter for people's well-being. For example, the difference of immigrants' culture from the dominant Australian culture might decrease their life satisfaction in Australia. Although the income of migrants to Australia is presumably higher than their income before migration, it might be just sufficient to pay basic bills but not to allow putting aside funds for a rainy day. As a result, they experience greater difficulty in raising spare cash relative to other Australians. On the other hand, immigrants can use their past life as a point of comparison with their current financial situation in Australia, which causes their higher assessment of their financial prosperity compared to Australian-born residents. Hence, income alone does not determine the well-being of immigrants, and other factors such as the

possible relative deterioration of immigrants' living conditions or their reappraisal of their values need to be considered.

To sum up, some aspects of immigrants' financial behaviour in Australia differ from those of other Australians. For example, they tend to take lower financial risk and to save less than those who were born in the country. The beliefs they were brought up with continue to influence them after migration to Australia and can discourage them from participating in Australian financial markets or using Australian financial institutions if they previously had a negative experience. With time though, their views can change and, accordingly, some aspects of their behaviour, such as their propensity to take financial risk, can alter. Immigrants' ties with their home countries in the form of providing financial support to their families in their home countries might also reduce their funds available for investing in the Australian financial markets. Immigrants' decisions to remit depend on their personal characteristics as well as on pressures from their families in their countries of origin and their financial abilities. These decisions have also been affected by the recent amendments to the Australian immigration policies aimed to attract more qualified skilled individuals – better contributors to the development of the Australian economy and less of a burden to the social security system. In particular, after the reforms, the amounts which immigrants could afford to transfer to their families overseas increased. However, despite being able to earn a higher income comparable with the income of other Australian residents, immigrants to Australia are less satisfied with their lives than their Australian-born counterparts. Although a higher income initially increases an immigrant's life satisfaction, this effect is weakened by an increase in their income aspirations after they adjust to their current financial situation and start comparing it with that of other Australian residents. Other factors, such as the degree of differences between their culture and the Australian culture could also negatively influence an immigrant's well-being in Australia.

These empirical results can be considered by Australian policymakers for future government reforms. For example, to encourage a more active participation of immigrants in the Australian financial markets, it could be beneficial to provide more information about the reliability and efficiency of the Australian financial institutions to newly arrived migrants. This knowledge, though, is better distributed through community organisations, and not the government, considering the detected lack of trust in government institutions in immigrants who have low participation in financial markets. Earning their trust this way is worthwhile. If immigrants are confident that their rights as investors are protected and that Australia is a

stable country with control of corruption and constrained executive authority, then their propensity to take financial risk should increase. Greater trust in financial institutions in Australia should also encourage immigrants' savings by counterbalancing their mistrust in the financial systems of their home countries.

Immigrants' need to support their families overseas could also reduce funds available for investment in the Australian economy. Although remittances are beneficial for the development of the recipient countries, high amounts of outward transfers can have a detrimental effect on a sending country's economy. As proved in Chapter 4, outward remittances can be controlled by immigration policies. For example, the Review of the Independent and Skilled-Australian Linked Categories implemented in 1999 had an effect on the amounts transferred overseas. Knowing other factors that influence remitting probability and the size of the transfers could be also beneficial for future reform planning. As found in Chapter 4, having left immediate family members overseas increases the amount of remittances and the likelihood of remitting, with the most prominent effect registered for immigrants with children still in their home countries. Hence, immigration policies lenient towards the migration of family members of primary applicants for an Australian visa, especially their children, could result in lower outward remittances from Australia. However, the overall effect of such a change on the Australian economy would not necessary be positive since there would be other government expenses involved, such as the payment of unemployment benefits. The analysis of this expenditure is beyond the scope of this thesis but would be of interest for future research.

In addition to predictable immigration and resettlement expenses, permanent migrants face other, mostly intangible, costs, such as losing touch with their friends and families, being far away from their native environment and being forced to start from scratch. These costs, often not obvious and therefore unexpected, could reduce immigrants' well-being and accordingly affect the Australian economy through their lower productivity. Therefore, it is in the Australian Government's interest to increase future immigrants' awareness of problems they could face after migration, so that they can weigh all the pros and cons of migration before making their decision. Although it is not possible to prevent an increase in the income aspirations of new settlers – one of the factors reducing their well-being noted in Chapter 5 – other factors, such as the possible deterioration in their living standards or their cultural differences, can be managed. For example, media portraying Australia as a rich country could also give a realistic picture about its higher cost of living than in most developing countries.

Likewise, potential immigrants should be advised that, when possible, it would help their decision if they could visit Australia first before deciding on permanent migration. Integration programs could also provide immigrants opportunities to participate in the social life of Australia and to overcome their homesickness.

The above recommendations are by no means comprehensive and are based on the outcomes of the research limited to a few basic aspects of the financial behaviour of immigrants. Additional suggestions may arise if the analysis is extended to include other attributes, such as immigrants' receipt of government benefits or their investment in real estate. Similarly, the knowledge of immigrants' financial activities in their home countries, if available, would enrich the analysis currently constrained by the limitations of HILDA and LSIA data. Although these data sets complement each other well, as shown in Chapter 5, it would also have been useful to compare the results obtained using one dataset with the results from another in some of the analyses reported in other chapters. For example, the limitation of HILDA data does not allow an analysis of the remitting behaviour of immigrants which was carried out using LSIA data. Using another dataset that has information on both savings and remittances in addition to LSIA data for this analysis could have provided a deeper explanation of why the saving rates of immigrants are lower than those of other Australians. The restricted coverage of the LSIA questions, in turn, does not allow the examination of immigrants' ability to take financial risk and their saving behaviour, which are thoroughly investigated using data from the HILDA survey. Additionally, having more years of data would increase the range of observations and improve the reliability of the outcomes.

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# APPENDICES

## Appendix A Extra tables for Chapter 2

### Table A.1 Definition of variables: individual characteristics

| Variable | Definition |
|---|---|
| Equity investment | Dichtonomous dependent variable: equals to 1 if household has positive equity investment and 0 if no equity investment. Equity investment includes total shares, managed funds and property trusts for the household |
| Self-reported financial risk-taking (SRFRT) | Ordered dependent variable measuring financial risk an individual is prepared to take on a scale from 1 to 4: 1 - not willing to take financial risks; 2 - takes average financial risks expecting average returns; 3 - takes above-average risks expecting above-average returns; and 4 - takes substantial risks |
| Age | Age as at 30 June 2002 for wave 2 (2006 for wave 6) |
| Wealth | Household Net Worth (Assets minus debts for the household)/10,000 |
| Income | Ln(Financial Year Disposable Income +1) |
| Employment | 3 dummy variables: employed (base case), unemployed and not in labor force |
| Occupation | Occupation according to the Australian Standard Classification of Occupations (ASCO). Second Edition, 1997. 9 dummy variables: managers and administrators (base case), professionals, associate professionals, trades persons, elementary clerical workers, intermediate clerical workers, advanced clerical workers, production workers, labourers and related workers. |
| Education | Highest education status. 3 dummy variables: no post-school qualification (base case), bachelor degree or higher and other post-school qualification |
| Gender | Dummy variable which is equal to 1 for male respondent and 0 for female |
| Marital status | Current marital status. 3 dummy variables: married or de-facto (base case), previously married and never been married |
| No. of children | Number of resident children aged 14 years or younger |
| MSR | Major Statistical Region of the dwelling. 13 dummy variables: Sydney (base case), balance of New South Wales, Melbourne, balance of Victoria, Brisbane, balance of Queensland, Adelaide, balance of South Australia, Perth, balance of Weastern Australia, Tasmania, Northern Territory, Australian Capital Territory |
| Location of household | Section of State. 4 dummy variables: major urban (base case), other urban, bounded locality (rural area with a population of 200-999) and rural balance (ABS 2003) |

**Table A.2 Definition of variables: country variables**

| Variable | Definition |
|---|---|
| Voice and Accountability | An assessment of the degree to which citizens play a part in electing their government, freedom of association and freedom of speech. Measured by positive numbers not exceeding 2, with higher scores corresponding to better outcomes. |
| Political Stability | Political Stability and Absence of Violence - an assessment of the probability of weakening or changing of the government using violent or illegitimate means. Measured by positive numbers not exceeding 2, with higher scores corresponding to better outcomes. |
| Government Effectiveness | An assessment of the caliber of civil and public services, and the governments pledge to permit policy formulation and implementation free of political pressure and interferences. Measured by positive numbers not exceeding 2, with higher scores corresponding to better outcomes. |
| Regulatory Quality | An assessment of the government's capability to create and apply policies encouraging development of private sector. Measured by positive numbers not exceeding 2, with higher scores corresponding to better outcomes. |
| Rule of Law | An assessment of the degree to which people trust and comply with the social laws including reinforcement of the contract, property rights, the police, the courts and crime prevention. Measured by positive numbers not exceeding 2, with higher scores corresponding to better outcomes. |
| Control of Corruption | An assessment of the degree to which public control is used for personal benefits as well as governing the state by elite and all kinds of corruption. Measured by positive numbers not exceeding 2, with higher scores corresponding to better outcomes. |
| Constraint on Executive | Measure of the degree of institutional constraints on the both individual or collective executive authority on a scale from 1 to 7, with 1 representing unlimited executive authority and 7 – executive parity or subordination. |
| GDP | GDP per capita, PPP (constant 2005 international USD)/10,000. |
| Market Capitalisation | Market captitalisation of listed companies (% of GDP). |
| Workers Remittances | Received workers remittances and compensation to employees (% of GDP). |
| School Enrolment | Secondary school enrolment (% net). |
| British Legal | Dummy variable which is equal to 1 if the country has British legal system and 0 otherwise. |
| Latitude | Absolute value of the country's latitude divided by 90. |
| English Speaking | Dummy variable which is equal to 1 if official languages of the country include English and if at least 50 per cent of surveyed immigrants speak only English language at home. |
| Religion | 6 dummy variables measuring if a country has dominant one of the following six religious group: Christians (base case), Muslims, Buddhists, Chinese Universists, Hindus or non-religious group. |

## Table A.3 Country-level variables summary statistics (combined data)

| Variable | No. of countries | No. of observations | Mean | Standard Deviation | Min | Max | AUS value (Av. value for 2002 and 2006) |
|---|---|---|---|---|---|---|---|
| **Institutional characteristics:** | | | | | | | |
| Ln (Control of Corruption) | 115 | 25844 | 1.73 | 0.13 | 0.59 | 1.84 | 1.77 |
| Ln (Government effectiveness) | 115 | 25844 | 1.73 | 0.13 | 0.59 | 1.84 | 1.77 |
| Ln (Rule of Law) | 115 | 25844 | 1.71 | 0.14 | 0.36 | 1.79 | 1.75 |
| Ln (Political Stability) | 114 | 25830 | 1.58 | 0.13 | 0.10 | 1.72 | 1.61 |
| Ln (Regulatory Quality) | 115 | 25844 | 1.68 | 0.13 | 0.26 | 1.77 | 1.72 |
| Ln (Voice & Accountability) | 114 | 25838 | 1.65 | 0.13 | 0.59 | 1.73 | 1.68 |
| British Legal | 111 | 25712 | 0.91 | 0.28 | 0.00 | 1.00 | 1.00 |
| Latitude | 110 | 25706 | 0.33 | 0.10 | 0.01 | 0.72 | 0.30 |
| School Enrolment | 79 | 23960 | 87.11 | 5.98 | 4.20 | 99.63 | 87.40 |
| Constraint on Executive | 101 | 25537 | 6.86 | 0.69 | 1.00 | 7.00 | 7.00 |
| **Other country characteristics:** | | | | | | | |
| GDP | 109 | 25744 | 2.11 | 0.63 | 0.01 | 4.12 | 2.27 |
| Market Capitalisation | 83 | 25459 | 117.24 | 41.64 | 0.62 | 471.35 | 125.12 |
| Workers Remittance | 97 | 25609 | 0.86 | 2.23 | 0.00 | 44.50 | 0.45 |
| English Speaking | 115 | 25844 | 0.88 | 0.33 | 0.00 | 1.00 | 1.00 |
| **Religion controls:** | | | | | | | |
| Christians | 113 | 25855 | 0.95 | 0.22 | 0.00 | 1.00 | 1.00 |
| Muslims | 113 | 25855 | 0.02 | 0.13 | 0.00 | 1.00 | 0.00 |
| Buddists | 113 | 25855 | 0.01 | 0.12 | 0.00 | 1.00 | 0.00 |
| Chinese Universists | 113 | 25855 | 0.00 | 0.07 | 0.00 | 1.00 | 0.00 |
| Hindus | 113 | 25855 | 0.01 | 0.08 | 0.00 | 1.00 | 0.00 |
| Non-religious | 113 | 25855 | 0.01 | 0.08 | 0.00 | 1.00 | 0.00 |

**Notes**: First six variables have been rescaled by adding 4 and converting into logariphms.

**Table A.4 Correlation between institutional qualities (combined data)**

| Variable | Ln (Control of Corruption) | Ln (Government Effectiveness) | Ln (Rule of Law) | Ln (Political Stability) | Ln (Regulatory Quality) | Ln (Voice & Accountability) | Constraint on Executive | British Legal | Latitude | School Enrolment |
|---|---|---|---|---|---|---|---|---|---|---|
| Ln (Control of Corruption) | | | | | | | | | | |
| Ln (Government Effectiveness) | 0.999*** | | | | | | | | | |
| Ln (Rule of Law) | 0.9820*** | 0.9820*** | | | | | | | | |
| Ln (Political Stability) | 0.8474*** | 0.8474*** | 0.8510*** | | | | | | | |
| Ln (Regulatory Quality) | 0.9689*** | 0.9689*** | 0.9549*** | 0.7883*** | | | | | | |
| Ln (Voice & Accountability) | 0.8813*** | 0.8813*** | 0.8827*** | 0.7335*** | 0.8947*** | | | | | |
| Constraint on Executive | 0.7256*** | 0.7256*** | 0.7161*** | 0.5430*** | 0.7778*** | 0.9207*** | | | | |
| British Legal | 0.6297*** | 0.6297*** | 0.6436*** | 0.4464*** | 0.5649*** | 0.5638*** | 0.4333*** | | | |
| Latitude | 0.1656*** | 0.1656*** | 0.1483*** | 0.0881*** | 0.2331*** | 0.1900*** | 0.2081*** | -0.2093*** | | |
| School Enrolment | 0.7388*** | 0.7388*** | 0.7407*** | 0.6257*** | 0.7450*** | 0.7674*** | 0.6918*** | 0.3204*** | 0.4923*** | |

**Notes:** *** indicates significance at at least the 1% level

**Table A.5 Effects of additional country controls on probability of equity investment by immigrants aged 15 or older (2002 data)**

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| Age | 0.0194** | 0.0221** | 0.0194** | 0.0194** | 0.0212** | 0.0261*** | 0.0216** | 0.0373*** | 0.0386*** |
| | (0.00951) | (0.00956) | (0.00953) | (0.00957) | (0.00960) | (0.00996) | (0.0101) | (0.0116) | (0.0116) |
| $Age^2$ | -0.000145 | -0.000159* | -0.000146 | -0.000145 | -0.000162* | -0.000213** | -0.000179* | -0.000295*** | -0.000299*** |
| | (0.0000931) | (0.0000934) | (0.0000933) | (0.0000936) | (0.0000938) | (0.0000969) | (0.0000981) | (0.000111) | (0.000112) |
| Wealth | 0.00905*** | 0.00903*** | 0.00905*** | 0.00895*** | 0.00892*** | 0.00847*** | 0.00959*** | 0.00892*** | 0.00897*** |
| | (0.000556) | (0.000562) | (0.000558) | (0.000559) | (0.000559) | (0.000561) | (0.000617) | (0.000684) | (0.000686) |
| Income | 0.0117 | 0.0120 | 0.0120 | 0.0141 | 0.0123 | 0.0119 | 0.0148 | 0.0146 | 0.0144 |
| | (0.0154) | (0.0154) | (0.0155) | (0.0157) | (0.0157) | (0.0160) | (0.0163) | (0.0197) | (0.0198) |
| **Employment status (Employed = base case):** | | | | | | | | | |
| Unemployed | -0.465*** | -0.464*** | -0.462*** | -0.459*** | -0.465*** | -0.429*** | -0.456*** | -0.358** | -0.370** |
| | (0.141) | (0.142) | (0.141) | (0.141) | (0.141) | (0.152) | (0.155) | (0.177) | (0.177) |
| Not in labour force | -0.170** | -0.171** | -0.170** | -0.176** | -0.164** | -0.166** | -0.145* | -0.198** | -0.214** |
| | (0.0702) | (0.0705) | (0.0705) | (0.0710) | (0.0712) | (0.0742) | (0.0751) | (0.0868) | (0.0873) |
| **Level of highest education achieved (No post-school qualification = base case):** | | | | | | | | | |
| Bachelor degree or higher | 0.160*** | 0.152** | 0.160*** | 0.167*** | 0.166*** | 0.155** | 0.145** | 0.114 | 0.110 |
| | (0.0606) | (0.0608) | (0.0608) | (0.0608) | (0.0609) | (0.0626) | (0.0633) | (0.0720) | (0.0723) |
| Other post-school qualification | 0.483*** | 0.451*** | 0.480*** | 0.483*** | 0.485*** | 0.439*** | 0.423*** | 0.382*** | 0.377*** |
| | (0.0662) | (0.0672) | (0.0668) | (0.0667) | (0.0667) | (0.0692) | (0.0705) | (0.0834) | (0.0843) |
| Gender (1 if male) | -0.0802 | -0.0730 | -0.0844 | -0.0808 | -0.0827 | -0.0693 | -0.0729 | -0.0638 | -0.0610 |
| | (0.0525) | (0.0527) | (0.0526) | (0.0528) | (0.0529) | (0.0546) | (0.0554) | (0.0643) | (0.0646) |
| **Marital status (Married = base case):** | | | | | | | | | |
| Previously married | -0.293*** | -0.293*** | -0.294*** | -0.293*** | -0.295*** | -0.287*** | -0.263*** | -0.277*** | -0.269*** |
| | (0.0771) | (0.0775) | (0.0773) | (0.0772) | (0.0772) | (0.0788) | (0.0794) | (0.0897) | (0.0901) |
| Never been married | 0.0842 | 0.0839 | 0.0842 | 0.0782 | 0.0703 | 0.103 | 0.123 | 0.168 | 0.180 |
| | (0.0957) | (0.0960) | (0.0959) | (0.0967) | (0.0967) | (0.102) | (0.103) | (0.115) | (0.115) |
| Children | -0.000124 | -0.000358 | -0.00229 | 0.00115 | -3.03e-05 | -0.00598 | -0.00703 | -0.0134 | -0.00984 |
| | (0.0302) | (0.0303) | (0.0302) | (0.0303) | (0.0303) | (0.0316) | (0.0320) | (0.0386) | (0.0386) |

(continued on next page)

## Table A.5 (continued)

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| **Country-of-origin characteristics:** | | | | | | | | | |
| LN(Rule | 0.419*** | 0.769*** | 0.364*** | 0.281 | 0.141 | 0.0868 | -0.0366 | 1.026** | 0.419 |
| of Law) | (0.115) | (0.146) | (0.130) | (0.217) | (0.225) | (0.250) | (0.278) | (0.414) | (0.557) |
| Asia | | 0.219** | | | | | | | 0.205 |
| | | (0.104) | | | | | | | (0.261) |
| Africa | | 0.434*** | | | | | | | 0.0811 |
| | | (0.140) | | | | | | | (0.272) |
| North | | 0.0963 | | | | | | | -0.492 |
| America | | (0.187) | | | | | | | (0.316) |
| South | | -0.118 | | | | | | | -0.263 |
| America | | (0.208) | | | | | | | (0.402) |
| Europe | | -0.0641 | | | | | | | -0.195 |
| | | (0.0861) | | | | | | | (0.161) |
| Muslims | | | 0.0706 | | | | | | |
| | | | (0.106) | | | | | | |
| Buddhists | | | -0.203* | | | | | | |
| | | | (0.111) | | | | | | |
| Chinese | | | 0.209 | | | | | | |
| Universists | | | (0.175) | | | | | | |
| Hindus | | | 0.0365 | | | | | | |
| | | | (0.151) | | | | | | |
| Non-religious | | | -0.225 | | | | | | |
| | | | (0.162) | | | | | | |
| GDP | | | | 0.0384 | 0.0194 | -0.0629 | -0.0532 | -0.0270 | 0.0607 |
| | | | | (0.0444) | (0.0452) | (0.0520) | (0.0527) | (0.0709) | (0.0872) |
| English | | | | | 0.160** | 0.0343 | 0.0571 | 0.117 | 0.150 |
| speaking | | | | | (0.0671) | (0.0758) | (0.0798) | (0.0977) | (0.112) |
| Market | | | | | | 0.00586*** | 0.00619*** | 0.00549*** | 0.00611** |
| capitalisation | | | | | | (0.00170) | (0.00174) | (0.00207) | (0.00262) |
| Squared market | | | | | | -0.0000139** | -0.0000151** | -0.0000162** | -0.0000222** |
| capitalisation | | | | | | (0.00000677) | (0.00000685) | (0.00000765) | (0.00000907) |
| Workers | | | | | | | 0.00550 | -0.00541 | -0.0260 |
| remittances | | | | | | | (0.00979) | (0.0185) | (0.0216) |
| School | | | | | | | | -0.0236*** | -0.0185** |
| enrolment | | | | | | | | (0.00590) | (0.00756) |
| Constant | -1.884*** | -2.560*** | -1.788*** | -1.753*** | -1.604*** | -1.701*** | -1.530*** | -1.581** | -1.111 |
| | (0.300) | (0.356) | (0.320) | (0.380) | (0.385) | (0.421) | (0.471) | (0.717) | (1.076) |
| Observations | 3073 | 3073 | 3073 | 3038 | 3038 | 2818 | 2764 | 2107 | 2107 |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. Standard errors are indicated in parentheses. All models passed the LR Chi-Square test, with the LR statistic ranging from 483.7 to 679.2 and the pseudo R-squared ranging from 0.158 to 0.174.*** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

**Table A.6 Effects of additional country controls on the probability of equity investment by immigrants aged 15 or older (2006 data)**

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| Age | -0.00247 | -0.00166 | -0.00167 | -0.00244 | -0.00235 | -0.00220 | -0.00149 | 0.00135 | 0.00113 |
| | (0.00995) | (0.00999) | (0.00998) | (0.0101) | (0.0101) | (0.0102) | (0.0103) | (0.0127) | (0.0128) |
| $Age^2$ | 0.0000824 | 0.0000809 | 0.0000739 | 0.0000836 | 0.0000829 | 0.0000794 | 0.0000733 | 0.0000878 | 0.0000917 |
| | (0.0000963) | (0.0000966) | (0.0000966) | (0.0000971) | (0.0000972) | (0.0000984) | (0.0000988) | (0.000119) | (0.000120) |
| Wealth | 0.00437*** | 0.00437*** | 0.00437*** | 0.00434*** | 0.00434*** | 0.00425*** | 0.00426*** | 0.00318*** | 0.00318*** |
| | (0.000332) | (0.000333) | (0.000332) | (0.000337) | (0.000337) | (0.000338) | (0.000340) | (0.000373) | (0.000373) |
| Income | 0.0325* | 0.0364** | 0.0340* | 0.0351* | 0.0347* | 0.0394** | 0.0392** | 0.0493** | 0.0507** |
| | (0.0176) | (0.0178) | (0.0178) | (0.0179) | (0.0180) | (0.0183) | (0.0183) | (0.0239) | (0.0240) |
| **Employment status (Employed = base case):** | | | | | | | | | |
| Unemployed | -0.390** | -0.387** | -0.385** | -0.398** | -0.400** | -0.325 | -0.310 | -0.459 | -0.478* |
| | (0.190) | (0.191) | (0.191) | (0.192) | (0.192) | (0.197) | (0.198) | (0.283) | (0.284) |
| Not in labour force | -0.215*** | -0.210*** | -0.205*** | -0.206*** | -0.205*** | -0.193** | -0.193** | -0.252*** | -0.256*** |
| | (0.0756) | (0.0760) | (0.0758) | (0.0765) | (0.0766) | (0.0774) | (0.0777) | (0.0949) | (0.0952) |
| **Level of highest education achieved (No post-school qualification = base case):** | | | | | | | | | |
| Bachelor degree or higher | 0.0655 | 0.0595 | 0.0667 | 0.0557 | 0.0557 | 0.0484 | 0.0531 | 0.0639 | 0.0646 |
| | (0.0639) | (0.0640) | (0.0640) | (0.0644) | (0.0644) | (0.0652) | (0.0655) | (0.0804) | (0.0805) |
| Other post-school qualification | 0.319*** | 0.299*** | 0.315*** | 0.311*** | 0.311*** | 0.301*** | 0.321*** | 0.309*** | 0.314*** |
| | (0.0678) | (0.0687) | (0.0684) | (0.0687) | (0.0687) | (0.0697) | (0.0703) | (0.0884) | (0.0891) |
| Gender (male if 1) | -0.0439 | -0.0378 | -0.0449 | -0.0350 | -0.0351 | -0.0455 | -0.0529 | -0.131* | -0.124* |
| | (0.0544) | (0.0545) | (0.0545) | (0.0549) | (0.0549) | (0.0555) | (0.0560) | (0.0693) | (0.0695) |
| **Marital status (Married = base case):** | | | | | | | | | |
| Previously married | -0.230*** | -0.228*** | -0.229*** | -0.239*** | -0.239*** | -0.241*** | -0.247*** | -0.257*** | -0.267*** |
| | (0.0768) | (0.0770) | (0.0769) | (0.0773) | (0.0774) | (0.0781) | (0.0783) | (0.0930) | (0.0932) |
| Never been married | -0.0566 | -0.0593 | -0.0499 | -0.0382 | -0.0390 | -0.0223 | -0.0256 | 0.0918 | 0.0976 |
| | (0.101) | (0.101) | (0.101) | (0.102) | (0.102) | (0.104) | (0.105) | (0.136) | (0.136) |
| Children | -0.0271 | -0.0312 | -0.0268 | -0.0280 | -0.0280 | -0.0209 | -0.0277 | -0.0127 | -0.0171 |
| | (0.0345) | (0.0346) | (0.0347) | (0.0348) | (0.0348) | (0.0354) | (0.0358) | (0.0449) | (0.0452) |

(continued on next page)

## Table A6 (continued)

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| **Country-of-origin characteristics:** | | | | | | | | | |
| LN(Rule | 0.557*** | 0.830*** | 0.530*** | 0.761*** | 0.735*** | 0.792*** | 0.843*** | 1.291** | 1.781** |
| of Law) | (0.119) | (0.151) | (0.136) | (0.233) | (0.253) | (0.275) | (0.297) | (0.632) | (0.743) |
| Asia | | 0.245** | | | | | | | 0.567* |
| | | (0.108) | | | | | | | (0.333) |
| Africa | | 0.256* | | | | | | | 0.602 |
| | | (0.144) | | | | | | | (0.423) |
| North | | -0.0229 | | | | | | | 0.175 |
| America | | (0.180) | | | | | | | (0.392) |
| South | | 0.0758 | | | | | | | 0.534 |
| America | | (0.219) | | | | | | | (0.395) |
| Europe | | 0.0104 | | | | | | | 0.248 |
| | | (0.0876) | | | | | | | (0.294) |
| Muslims | | | -0.147 | | | | | | |
| | | | (0.119) | | | | | | |
| Buddhists | | | 0.0327 | | | | | | |
| | | | (0.118) | | | | | | |
| Chinese | | | -0.0311 | | | | | | |
| Universists | | | (0.171) | | | | | | |
| Hindus | | | 0.344** | | | | | | |
| | | | (0.143) | | | | | | |
| Non-religious | | | -0.0652 | | | | | | |
| | | | (0.166) | | | | | | |
| GDP/10,000 | | | | -0.0605 | -0.0614 | -0.111** | -0.114** | -0.105 | -0.135 |
| | | | | (0.0421) | (0.0423) | (0.0480) | (0.0481) | (0.0802) | (0.107) |
| English | | | | | 0.0197 | -0.0502 | -0.0796 | -0.123 | -0.0614 |
| speaking | | | | | (0.0739) | (0.0808) | (0.0827) | (0.127) | (0.132) |
| Market | | | | | | 0.00272** | 0.00293*** | 0.00258 | 0.000362 |
| capitalisation | | | | | | (0.00106) | (0.00110) | (0.00219) | (0.00285) |
| Squared market | | | | | | -0.00000425* | -0.00000462* | -0.00000433 | -0.00000132 |
| capitalisation | | | | | | (0.00000241) | (0.00000246) | (0.00000441) | (0.0000053) |
| Workers | | | | | | | 0.000156 | -0.00368 | -0.00640 |
| remittances | | | | | | | (0.00858) | (0.0116) | (0.0145) |
| School | | | | | | | | -0.00713 | -0.000967 |
| enrolment | | | | | | | | (0.00557) | (0.00678) |
| Constant | -1.739*** | -2.319*** | -1.735*** | -2.001*** | -1.966*** | -2.189*** | -2.287*** | -2.557*** | -3.953*** |
| | (0.327) | (0.387) | (0.350) | (0.420) | (0.440) | (0.477) | (0.523) | (0.847) | (1.222) |
| Observations | 2717 | 2717 | 2717 | 2652 | 2652 | 2587 | 2555 | 1676 | 1676 |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. Standard errors are indicated in parentheses. All models passed the LR Chi-Square test, with the LR statistic ranging from 228.2 to 439.5 and the pseudo R-squared ranging from 0.102 to 0.123.*** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

**Table A.7 Effects of home institutions on the probability of equity investment by immigrants aged 15 or older, depending on their age at migration to Australia (2002 and 2006 data)**

| | | Age at arrival in Australia | | |
|---|---|---|---|---|
| **Variables** | **All** | **1-15** | **16-20** | **21+** |
| **2002** (with year of arrival controls)[a] | | | | |
| Ln (Rule of Law) | 0.419*** | 0.00225 | 0.269 | 0.465*** |
| | (0.115) | (0.210) | (0.419) | (0.161) |
| Log likelihood | -1717 | -553.2 | -154.5 | -911.3 |
| Pseudo R-squared | 0.161 | 0.153 | 0.284 | 0.191 |
| Number of observations | 3073 | 957 | 336 | 1719 |
| **2006**(with year of arrival controls)[a] | | | | |
| Ln (Rule of Law) | 0.555*** | 0.166 | 0.510 | 0.617*** |
| | (0.119) | (0.212) | (0.467) | (0.166) |
| Log likelihood | -1576 | -530.6 | -133.2 | -819.0 |
| Pseudo R-squared | 0.120 | 0.139 | 0.260 | 0.131 |
| Number of observations | 2717 | 905 | 285 | 1458 |

**Notes:** In addition to the coefficients reported above, the regressions also include controls for age, age squared, wealth, income, employment, education, gender, marital status, children, MSR and year of arrival. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

[a] Due to similarity of results produced with and without year of arrival controls, only those with controls are presented.

**Table A.8 Effects of home institutions on probability of equity investment by immigrants aged 36 or older, depending on years spent in Australia (panel data)**

| | | Years in Australia | | | | |
|---|---|---|---|---|---|---|
| **Variables** | **All** | **1-7** | **8-12** | **13-17** | **18-27** | **28+** |
| **No age at arrival control** | | | | | | |
| Ln (Rule of Law) | 2.057*** | 2.151 | 0.435 | 1.087 | 2.659*** | 1.614** |
| | (0.415) | (2.087) | (0.652) | (1.045) | (0.894) | (0.627) |
| Log likelihood | -2297 | -105.4 | -153.3 | -243.9 | -335.8 | -1361 |
| Number of observations | 4426 | 266 | 313 | 468 | 723 | 2650 |
| **Age at arrival control** | | | | | | |
| Ln (Rule of Law) | 1.556*** | 2.155 | 0.433 | 1.096 | 2.504*** | 1.481** |
| | (0.418) | (1.939) | (0.653) | (1.055) | (0.834) | (0.622) |
| Log likelihood | -2269 | -105.3 | -153.3 | -243.9 | -334.7 | -1348 |
| Number of observations | 4408 | 266 | 313 | 468 | 723 | 2632 |

**Notes:** In addition to the coefficients reported above, the regressions also include controls for age, age squared, wealth, income, employment, education, gender, marital status, children and MSR. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

## Table A.9 Effects of additional country controls on SRFRT by immigrants aged 15 or older (2002 data)

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| Age | 0.0225** | 0.0223** | 0.0232** | 0.0234** | 0.0237** | 0.0303*** | 0.0293*** | 0.0287** | 0.0297** |
| | (0.0108) | (0.0109) | (0.0108) | (0.0109) | (0.0109) | (0.0112) | (0.0113) | (0.0127) | (0.0128) |
| $Age^2$ | -0.000368*** | -0.000367*** | -0.000373*** | -0.000375*** | -0.000378*** | -0.000442*** | -0.000432*** | -0.000390*** | -0.000399*** |
| | (0.000110) | (0.000110) | (0.000110) | (0.000111) | (0.000111) | (0.000113) | (0.000114) | (0.000127) | (0.000128) |
| Wealth | 0.00292*** | 0.00290*** | 0.00290*** | 0.00290*** | 0.00289*** | 0.00287*** | 0.00295*** | 0.00271*** | 0.00262*** |
| | (0.000356) | (0.000360) | (0.000357) | (0.000358) | (0.000358) | (0.000360) | (0.000371) | (0.000428) | (0.000433) |
| Income | 0.00260 | 0.00357 | 0.00606 | 0.00607 | 0.00583 | 0.00727 | 0.00907 | 0.0280 | 0.0295 |
| | (0.0173) | (0.0173) | (0.0174) | (0.0175) | (0.0175) | (0.0179) | (0.0181) | (0.0226) | (0.0227) |
| **Employment status (Employed = base case):** | | | | | | | | | |
| Unemployed | -0.0444 | -0.0579 | -0.0500 | -0.0368 | -0.0371 | -0.00759 | -0.00670 | -0.163 | -0.164 |
| | (0.152) | (0.152) | (0.152) | (0.152) | (0.152) | (0.157) | (0.160) | (0.196) | (0.196) |
| Not in labour force | -0.275*** | -0.279*** | -0.278*** | -0.273*** | -0.272*** | -0.276*** | -0.282*** | -0.323*** | -0.315*** |
| | (0.0761) | (0.0762) | (0.0763) | (0.0766) | (0.0767) | (0.0788) | (0.0794) | (0.0920) | (0.0922) |
| **Level of highest education achieved (No post-school qualification = base case):** | | | | | | | | | |
| Bachelor degree or higher | 0.0945 | 0.0978 | 0.0919 | 0.0968 | 0.0961 | 0.0780 | 0.0772 | 0.0902 | 0.0919 |
| | (0.0647) | (0.0648) | (0.0648) | (0.0649) | (0.0649) | (0.0662) | (0.0666) | (0.0745) | (0.0748) |
| Other post-school qualification | 0.434*** | 0.425*** | 0.425*** | 0.438*** | 0.437*** | 0.399*** | 0.381*** | 0.367*** | 0.343*** |
| | (0.0672) | (0.0683) | (0.0676) | (0.0675) | (0.0675) | (0.0696) | (0.0706) | (0.0830) | (0.0840) |
| Gender (1 if male) | 0.348*** | 0.349*** | 0.348*** | 0.345*** | 0.345*** | 0.360*** | 0.364*** | 0.317*** | 0.316*** |
| | (0.0553) | (0.0554) | (0.0553) | (0.0556) | (0.0556) | (0.0570) | (0.0578) | (0.0664) | (0.0666) |
| **Marital status (Married = base case):** | | | | | | | | | |
| Previously married | 0.0596 | 0.0606 | 0.0547 | 0.0561 | 0.0564 | 0.0494 | 0.0567 | 0.0518 | 0.0445 |
| | (0.0854) | (0.0856) | (0.0856) | (0.0855) | (0.0855) | (0.0865) | (0.0868) | (0.0979) | (0.0980) |
| Never been married | 0.143 | 0.150 | 0.142 | 0.133 | 0.132 | 0.188* | 0.186* | 0.258** | 0.264** |
| | (0.0990) | (0.0991) | (0.0991) | (0.0998) | (0.0998) | (0.104) | (0.105) | (0.117) | (0.118) |
| No. of children | -0.00565 | -0.00466 | -0.00390 | -0.00633 | -0.00664 | -0.00285 | 0.00186 | 0.0111 | 0.00941 |
| | (0.0316) | (0.0317) | (0.0317) | (0.0317) | (0.0317) | (0.0324) | (0.0327) | (0.0376) | (0.0379) |

(continued on next page)

## Table A9 (continued)

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| **Country-of-origin characteristics:** | | | | | | | | | |
| LN (Rule | 0.505*** | 0.442*** | 0.548*** | 0.439* | 0.415* | 0.377 | 0.139 | -0.0294 | -0.0103 |
| of Law) | (0.125) | (0.159) | (0.141) | (0.228) | (0.239) | (0.260) | (0.286) | (0.429) | (0.568) |
| Asia | | 0.0556 | | | | | | | 0.121 |
| | | (0.107) | | | | | | | (0.263) |
| Africa | | -0.0714 | | | | | | | 0.141 |
| | | (0.144) | | | | | | | (0.262) |
| North | | 0.263 | | | | | | | 0.583* |
| America | | (0.176) | | | | | | | (0.300) |
| South | | -0.233 | | | | | | | -0.112 |
| America | | (0.239) | | | | | | | (0.398) |
| Europe | | 0.0668 | | | | | | | 0.0145 |
| | | (0.0854) | | | | | | | (0.160) |
| Muslims | | | -0.0190 | | | | | | |
| | | | (0.116) | | | | | | |
| Buddhists | | | 0.0253 | | | | | | |
| | | | (0.118) | | | | | | |
| Chinese | | | 0.000282 | | | | | | |
| Universists | | | (0.177) | | | | | | |
| Hindus | | | 0.0359 | | | | | | |
| | | | (0.152) | | | | | | |
| Non-religious | | | 0.393** | | | | | | |
| | | | (0.157) | | | | | | |
| GDP | | | | 0.0142 | 0.0122 | -0.0104 | -0.00607 | -0.0834 | -0.155* |
| | | | | (0.0453) | (0.0457) | (0.0526) | (0.0532) | (0.0689) | (0.0855) |
| English | | | | | 0.0237 | -0.0289 | 0.0128 | 0.0730 | 0.0594 |
| speaking | | | | | (0.0680) | (0.0775) | (0.0810) | (0.0988) | (0.116) |
| Market | | | | | | 0.00271 | 0.00221 | 0.00374* | 0.00405 |
| capitalisation | | | | | | (0.00176) | (0.00178) | (0.00208) | (0.00266) |
| Squared market | | | | | | -0.0000104 | -0.00000937 | -0.0000112 | -0.0000113 |
| capitalisation | | | | | | (0.00000695) | (0.00000701) | (0.00000764) | (0.00000903) |
| Workers | | | | | | | -0.0162 | -0.0242 | -0.0231 |
| remittances | | | | | | | (0.0107) | (0.0187) | (0.0217) |
| School | | | | | | | | 0.00191 | 0.00882 |
| enrolment | | | | | | | | (0.00592) | (0.00772) |
| Observations | 2110 | 2110 | 2110 | 2091 | 2091 | 1999 | 1959 | 1521 | 1521 |

**Notes:** In addition to the coefficients reported above, the regressions also include controls for age, age squared, wealth, income, employment, education, gender, marital status, children and MSR. Standard errors are indicated in parentheses. All models passed the LR Chi-Square test, with the LR statistic ranging from 276.4 to 389.4 and the pseudo R-squared ranging from 0.0915 to 0.0943.*** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

## Table A.10 Effects of additional country controls on SRFRT by immigrants aged 15 or older (2006 data)

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| Age | 0.00550 | 0.00563 | 0.00412 | 0.00464 | 0.00506 | 0.00715 | 0.00521 | 0.0229 | 0.0224 |
| | (0.0112) | (0.0113) | (0.0113) | (0.0114) | (0.0114) | (0.0116) | (0.0116) | (0.0144) | (0.0145) |
| $Age^2$ | -0.000244** | -0.000242** | -0.000230** | -0.000239** | -0.000243** | -0.000266** | -0.000243** | -0.000376*** | -0.000372*** |
| | (0.000114) | (0.000114) | (0.000114) | (0.000115) | (0.000115) | (0.000117) | (0.000117) | (0.000143) | (0.000143) |
| Wealth | 0.00129*** | 0.00131*** | 0.00128*** | 0.00125*** | 0.00125*** | 0.00124*** | 0.00121*** | 0.000931*** | 0.000990*** |
| | (0.000199) | (0.000201) | (0.000199) | (0.000201) | (0.000201) | (0.000202) | (0.000202) | (0.000240) | (0.000243) |
| Income | 0.0712*** | 0.0713*** | 0.0741*** | 0.0763*** | 0.0736*** | 0.0719*** | 0.0692*** | 0.0487** | 0.0445* |
| | (0.0192) | (0.0193) | (0.0194) | (0.0197) | (0.0198) | (0.0200) | (0.0201) | (0.0244) | (0.0246) |
| **Employment status (Employed = base case):** | | | | | | | | | |
| Unemployed | -0.0461 | -0.0545 | -0.0655 | -0.0478 | -0.0585 | 0.00721 | -0.0372 | -0.232 | -0.288 |
| | (0.198) | (0.199) | (0.199) | (0.202) | (0.202) | (0.212) | (0.217) | (0.371) | (0.374) |
| Not in labour force | -0.175** | -0.181** | -0.187** | -0.177** | -0.173** | -0.154* | -0.172** | -0.194* | -0.200** |
| | (0.0788) | (0.0790) | (0.0791) | (0.0799) | (0.0799) | (0.0808) | (0.0813) | (0.0999) | (0.100) |
| **Level of highest education achieved (No post-school qualification = base case):** | | | | | | | | | |
| Bachelor degree or higher | 0.0454 | 0.0451 | 0.0392 | 0.0483 | 0.0488 | 0.0520 | 0.0494 | 0.0523 | 0.0580 |
| | (0.0673) | (0.0674) | (0.0675) | (0.0679) | (0.0679) | (0.0686) | (0.0689) | (0.0853) | (0.0854) |
| Other post-school qualification | 0.378*** | 0.373*** | 0.366*** | 0.377*** | 0.378*** | 0.394*** | 0.385*** | 0.310*** | 0.318*** |
| | (0.0680) | (0.0687) | (0.0684) | (0.0689) | (0.0689) | (0.0699) | (0.0705) | (0.0882) | (0.0890) |
| Gender (1 if male) | 0.361*** | 0.366*** | 0.361*** | 0.359*** | 0.357*** | 0.370*** | 0.361*** | 0.290*** | 0.293*** |
| | (0.0559) | (0.0561) | (0.0560) | (0.0566) | (0.0566) | (0.0572) | (0.0577) | (0.0716) | (0.0719) |
| **Marital status (Married = base case):** | | | | | | | | | |
| Previously married | -0.0396 | -0.0358 | -0.0450 | -0.0387 | -0.0408 | -0.0554 | -0.0688 | -0.0213 | -0.0261 |
| | (0.0848) | (0.0850) | (0.0849) | (0.0854) | (0.0854) | (0.0861) | (0.0863) | (0.104) | (0.105) |
| Never been married | 0.0480 | 0.0545 | 0.0308 | 0.0705 | 0.0688 | 0.0819 | 0.0684 | 0.264* | 0.263* |
| | (0.101) | (0.101) | (0.101) | (0.103) | (0.102) | (0.104) | (0.104) | (0.138) | (0.139) |
| No. of children | -0.0828** | -0.0812** | -0.0823** | -0.0867** | -0.0869** | -0.0878** | -0.0829** | -0.0438 | -0.0399 |
| | (0.0358) | (0.0358) | (0.0358) | (0.0363) | (0.0364) | (0.0369) | (0.0373) | (0.0459) | (0.0462) |

(continued on next page)

## Table A10 (continued)

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| **Country-of-origin characteristics:** | | | | | | | | | |
| LN(Rule | 0.0435 | 0.0491 | 0.151 | -0.134 | -0.277 | -0.234 | -0.570* | -1.462** | -1.650** |
| of Law) | (0.122) | (0.153) | (0.140) | (0.239) | (0.261) | (0.286) | (0.306) | (0.681) | (0.819) |
| Asia | | 0.0306 | | | | | | | 0.0429 |
| | | (0.109) | | | | | | | (0.326) |
| Africa | | -0.131 | | | | | | | -0.346 |
| | | (0.144) | | | | | | | (0.448) |
| North | | -0.0281 | | | | | | | -0.0681 |
| America | | (0.179) | | | | | | | (0.389) |
| South | | 0.149 | | | | | | | 0.583 |
| America | | (0.230) | | | | | | | (0.414) |
| Europe | | -0.0156 | | | | | | | 0.129 |
| | | (0.0867) | | | | | | | (0.285) |
| Muslims | | | 0.231* | | | | | | |
| | | | (0.118) | | | | | | |
| Buddhists | | | -0.0925 | | | | | | |
| | | | (0.125) | | | | | | |
| Chinese | | | 0.00880 | | | | | | |
| Universists | | | (0.161) | | | | | | |
| Hindus | | | -0.111 | | | | | | |
| | | | (0.158) | | | | | | |
| Non-religious | | | 0.356** | | | | | | |
| | | | (0.158) | | | | | | |
| GDP | | | | 0.0478 | 0.0451 | 0.0334 | 0.0398 | 0.193** | 0.151 |
| | | | | (0.0429) | (0.0430) | (0.0496) | (0.0496) | (0.0843) | (0.116) |
| English | | | | | 0.102 | 0.0817 | 0.119 | 0.130 | 0.111 |
| speaking | | | | | (0.0748) | (0.0822) | (0.0843) | (0.133) | (0.138) |
| Market | | | | | | 0.000589 | -0.000301 | 0.00108 | 0.00383 |
| capitalisation | | | | | | (0.00108) | (0.00112) | (0.00226) | (0.00312) |
| Squared market | | | | | | -0.00000142 | 0.0000000608 | -0.00000248 | -0.00000669 |
| capitalisation | | | | | | (0.00000239) | (0.00000244) | (0.00000451) | (0.00000575) |
| Workers | | | | | | | -0.0295*** | -0.0175 | -0.0183 |
| remittances | | | | | | | (0.00996) | (0.0142) | (0.0172) |
| School | | | | | | | | -0.00191 | -0.00373 |
| enrolment | | | | | | | | (0.00650) | (0.00776) |
| Observations | 1955 | 1955 | 1955 | 1922 | 1922 | 1886 | 1858 | 1222 | 1222 |

**Notes:** In addition to the coefficients reported above, the regressions also include controls for age, age squared, wealth, income, employment, education, gender, marital status, children and MSR. Standard errors are indicated in parentheses. All models passed the LR Chi-Square test, with the LR statistic ranging from 207.2 to 375 and the pseudo R-squared ranging from 0.0861 to 0.096.*** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

**Table A.11 Effects of home institutions on SRFRT by immigrants aged 15 or older, depending on their age at migration to Australia (2002 data)**

| | | Age at arrival in Australia | | |
|---|---|---|---|---|
| **Variables** | **All** | **1-15** | **16-20** | **21+** |
| **No year of arrival control** | | | | |
| Ln (Rule of Law) | 0.505*** | -0.0916 | -0.165 | 0.907*** |
| | (0.125) | (0.218) | (0.402) | (0.179) |
| Log likelihood | -1901 | -651.0 | -217.7 | -965.6 |
| R -squared | 0.0915 | 0.0633 | 0.131 | 0.127 |
| Number of observations | 2110 | 678 | 238 | 1159 |
| **Year of arrival control** | | | | |
| Ln (Rule of Law) | 0.513*** | -0.143 | -0.172 | 0.923*** |
| | (0.125) | (0.219) | (0.402) | (0.180) |
| Log likelihood | -1900 | -648.9 | -216.8 | -964.1 |
| R -squared | 0.0918 | 0.0664 | 0.135 | 0.128 |
| Number of observations | 2110 | 678 | 238 | 1159 |

**Notes:** In addition to the coefficients reported above, the regressions also include controls for age, age squared, wealth, income, employment, education, gender, marital status, children and MSR. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

**Table A.12 Effects of home institutions on SRFRT by immigrants aged 36 or older, depending on their age at migration (panel data)**

| | | Age at arrival in Australia | | |
|---|---|---|---|---|
| **Variables** | **All** | **1-15** | **16-20** | **21+** |
| **No year of arrival control** | | | | |
| Ln (Rule of Law) | 0.335*** | -0.353 | 0.617 | 0.531*** |
| | (0.109) | (0.224) | (0.439) | (0.141) |
| Log likelihood | -2741 | -752.5 | -252.5 | -1637 |
| Pseudo R -squared | 0.105 | 0.0977 | 0.159 | 0.125 |
| Number of observations | 3146 | 852 | 289 | 1956 |
| **Year of arrival control** | | | | |
| Ln (Rule of Law) | 0.347*** | -0.377* | 0.584 | 0.545*** |
| | (0.109) | (0.225) | (0.441) | (0.141) |
| Log likelihood | -2739 | -751.1 | -249.9 | -1634 |
| Pseudo R -squared | 0.106 | 0.0994 | 0.168 | 0.126 |
| Number of observations | 3146 | 852 | 289 | 1956 |

**Notes:** In addition to the coefficients reported above, the regressions also include controls for age, age squared, wealth, income, employment, education, gender, marital status, children and MSR. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

**Table A.13 Effects of home institutions on SRFRT by immigrants aged 36 years or older, depending on years spent in Australia**

| | | Years in Australia | | | | |
|---|---|---|---|---|---|---|
| **Variables** | **All** | **1-7** | **8-12** | **13-17** | **18-27** | **28+** |
| **Panel data**(with age at arrival controls)[a] | | | | | | |
| Ln (Rule of Law) | 0.295*** | -0.396 | 0.0166 | 0.717** | 0.260 | 0.148 |
| | (0.111) | (0.530) | (0.433) | (0.341) | (0.281) | (0.165) |
| Log likelihood | -2733 | -125.4 | -178.8 | -289.1 | -449.4 | -1572 |
| Pseudo R -squared | 0.106 | 0.213 | 0.186 | 0.186 | 0.154 | 0.114 |
| Number of observations | 3136 | 162 | 222 | 342 | 496 | 1912 |
| **2002**(with age at arrival controls)[a] | | | | | | |
| Ln (Rule of Law) | 0.593*** | 0.203 | 0.0361 | 1.391*** | 0.916** | 0.358 |
| | (0.160) | (0.771) | (0.544) | (0.459) | (0.453) | (0.238) |
| Log likelihood | -1381 | -62.97 | -99.64 | -166.0 | -191.7 | -780.7 |
| R -squared | 0.113 | 0.324 | 0.149 | 0.214 | 0.159 | 0.125 |
| Number of observations | 1604 | 98 | 127 | 201 | 212 | 965 |

**Notes:** In addition to the coefficients reported above, the regressions also include controls for age, age squared, wealth, income, employment, education, gender, marital status, children and MSR. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

[a] Due to similarity of results produced with and without individual's age at arrival controls, only those with controls are presented.

# Appendix B Extra tables for Chapter 3

**Table B.1 Definition of variables: individual characteristics**

| Variable | Definition |
|---|---|
| Age | Age as at 30 June 2006 |
| Dependency ratio | Household Dependency Ratio=(Household size-Number of income earners)/Household size |
| Wealth | Household Net Worth (Assets minus debts for the household)/10,000 |
| Househol income | Ln (Household financial year disposable fncome+1) |
| Income | Ln(Financial year disposable income+1) |
| Expenses | Household expenses including annual expenses for: groceries, alcohol, cigarettes and tobacco, public transport and taxis, meals eaten out, motor vehicle fuel, clothing and footwear, communication, holidays, insurance, medical treatments and medicines, utilities, home and motor repairs, and education **plus** 10 % of capital expenses such as cost of new or used vehicle, computers, televisions, whitegoods and furniture[33] **plus** annual rent and mortgage payments |
| Occupation | Occupation according to the Australian Standard Classification of Occupations (ASCO). Second Edition, 1997. 9 dummy variables: managers and administrators (base case), professionals, associate professionals, trades persons, elementary clerical workers, intermediate clerical workers, advanced clerical workers, production workers, labourers and related workers. |
| Education | Highest education status. 3 dummy variables: no post-school qualification (base case), bachelor degree or higher and other post-school qualification |
| Gender | Dummy variable which is equal to 1 for male respondent and 0 for female |
| Marital status | Current marrital status. 3 dummy variables: married or de-facto (base case), previously married and never been married |
| No. of children | Number of resident children aged 14 years or younger |
| No. of persons | Number of persons in household |
| Head | Dummy variable which is equal to 1 if respondent is earning the highest income in household (household head) and 0 otherwise |
| Spouse | Dummy variable whcih is equal to 1 if respondent is the spouse of household head and 0 otherwise |
| MSR | Major Statistical Region of the dwelling. 13 dummy variables: Sydney (base case), balance of New South Wales, Melbourne, balance of Victoria, Brisbane, balance of Queensland, Adelaide, balance of South Australia, Perth, balance of Weastern Australia, Tasmania, Northern Territory, Australian Capital Territory |
| Location of household | Section of State. 4 dummy variables: major urban (base case), other urban, bounded locality (rural area with a population of 200-999) and rural balance (ABS 2003) |

[33] 10 per cent of the capital expenses carried in the current year are added to account for annual depreciation of durable goods (Clarke & Lawn 2008).

**Table B.2 Results of Hausman endogeneity test and post-estimation test measuring the relevance of the excluded exogenous variables**

| Endogenous variables | Hausman test | Post-estimation test |
|---|---|---|
| | F- test | F -test |
| **Household level:** | | |
| **Heads 15+ years old** | | |
| Household income | | F(2,4594) = 857.28*** |
| | F(2,4595) = 28.70*** | |
| Wealth | | F(2,4594) = 1,535.84*** |
| **Heads 36+ years old** | | |
| Household income | | F(2,3561) = 1,896.38*** |
| | F(2,3559) = 28.57*** | |
| Wealth | | F(2, 3561) = 1,750.53*** |
| **Personal level:** | | |
| **Individuals 15+ years old** | | |
| Income | | F(2,8750) = 2967.83*** |
| | F(2,8748) = 7.98*** | |
| Wealth | | F(2,8750) = 3044.88*** |
| **Individuals 36+ years old** | | |
| Income | | F(2,5987) = 2189.75*** |
| | F(2,5985) = 9.07*** | |
| Wealth | | F(2,5987) = 2942.94*** |

**Notes:** Household disposable income in 2005 used as an instrument for household income. Personal disposable income is used as an instrument for personal income. Household wealth reported in 2002 used as an instrument for household wealth in both cases. Hausman test determines whether endogenous regressors are in fact exogenous. Significance of post-estimation F-statistic indicates that instruments have significant explanatory power. *** indicates p<=0.01.

**Table B.3 Definition of variables: country characteristics**

| Variable | Definition |
|---|---|
| Voice and Accountability | An assessment of the degree to which citizens play a part in electing their government, freedom of association and freedom of speech |
| Political Stability | Political Stability and Absence of Violence- an assessment of the probability of weakening or changing of the government using violent or illegitimate means |
| Government Effectiveness | An assessment of the caliber of civil and public services, and the governments pledge to permit policy formulation and implementation free of political pressure and interferences. |
| Regulatory Quality | An assessment of the government's capability to create and apply policies encouraging development of private sector |
| Rule of Law | An assessment of the degree to which people trust and comply with the social laws including reinforcement of the contract, property rights, the police, the courts and crime prevention. |
| Control of Corruption | An assessment of the degree to which public control is used for personal benefits as well as governing the state by elite and all kinds of corruption. |
| Constraint on Executive | Measure of the degree of institutional constraints on the both individual or collective executive authority. |
| GDP | GDP per capita, PPP (constant 2005 international USD)/10,000 |
| Market Captitalisation | Market captitalisation of listed companies (% of GDP) |
| Workers Remittances | Received workers remittances and compensation to employees (% of GDP) |
| School Enrolment | Secondary school enrolment (% net) |
| British Legal | Dummy variable which is equal to 1 if the country has British legal system and 0 otherwise |
| Latitude | Absolute value of the country's latitude divided by 90 |
| English Speaking | Dummy variable which is equal to 1 if official languages of the country include English and if at least 50 per cent of surveyed immigrants speak only English language at home. |
| Religion | 6 dummy variables measuring if a country has dominant one of the following six religious group: Christians, Muslims, Buddhists, Chinese Universists, Hindus or non-religious group. |
| National Saving Rate | Adjusted savings: gross savings (% of GNI) |
| Average National Saving Rate | Average national saving rate for the 2004-2006 period |
| Age Dependency Ratio | Dependent population as % of working-age population |
| Age Dependency Ratio (young) | Dependent young population as % of working-age population |
| Age Dependency Ratio (old) | Dependent old population as % of working-age population |

**Table B.4 Effect of additional country variables on the saving behaviour of immigrants aged 36 or older (individual level)**

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Income | 0.0581*** | 0.0583*** | 0.0584*** | 0.0576*** | 0.0565*** | 0.0542*** | 0.0527*** | 0.0545*** | 0.0567*** | 0.0552*** |
| | (0.0171) | (0.0171) | (0.0159) | (0.0159) | (0.0159) | (0.0160) | (0.0160) | (0.0158) | (0.0160) | (0.0160) |
| Wealth | -0.0000187 | -0.0000171 | 0.00000250 | -0.0000000690 | -0.00000797 | -0.0000190 | -0.0000106 | 0.00000320 | -0.0000262 | 0.00000545 |
| | (0.0000977) | (0.0000981) | (0.0000973) | (0.0000973) | (0.0000973) | (0.0000968) | (0.0000969) | (0.0000966) | (0.0000972) | (0.0000933) |
| Age | -0.00333 | -0.00341 | -0.00356 | -0.00418 | -0.00430 | -0.00395 | -0.00340 | -0.00626 | -0.00306 | -0.00379 |
| | (0.00701) | (0.00704) | (0.00700) | (0.00700) | (0.00699) | (0.00696) | (0.00695) | (0.00700) | (0.00703) | (0.00697) |
| Age squared | 0.0000532 | 0.0000536 | 0.0000570 | 0.0000606 | 0.0000610 | 0.0000574 | 0.0000540 | 0.0000738 | 0.0000518 | 0.0000563 |
| | (0.0000586) | (0.0000588) | (0.0000584) | (0.0000584) | (0.0000584) | (0.0000581) | (0.0000581) | (0.0000584) | (0.0000586) | (0.0000582) |
| Gender (1 if male) | 0.00314 | 0.00633 | 0.00862 | 0.00877 | 0.00809 | 0.00375 | 0.00840 | 0.00910 | -0.00000526 | 0.00759 |
| | (0.0199) | (0.0199) | (0.0197) | (0.0197) | (0.0196) | (0.0196) | (0.0196) | (0.0197) | (0.0198) | (0.0196) |
| No. of children | -0.0458*** | -0.0462*** | -0.0464*** | -0.0471*** | -0.0475*** | -0.0485*** | -0.0471*** | -0.0518*** | -0.0463*** | -0.0435** |
| | (0.0175) | (0.0175) | (0.0173) | (0.0173) | (0.0173) | (0.0172) | (0.0172) | (0.0173) | (0.0173) | (0.0173) |
| No. of persons | 0.0226* | 0.0227* | 0.0227* | 0.0237** | 0.0251** | 0.0267** | 0.0261** | 0.0227** | 0.0258** | 0.0236** |
| | (0.0118) | (0.0118) | (0.0116) | (0.0116) | (0.0117) | (0.0116) | (0.0116) | (0.0116) | (0.0117) | (0.0117) |
| Head | -0.251*** | -0.249*** | -0.244*** | -0.244*** | -0.244*** | -0.250*** | -0.252*** | -0.242*** | -0.243*** | -0.249*** |
| | (0.0448) | (0.0451) | (0.0440) | (0.0440) | (0.0440) | (0.0437) | (0.0439) | (0.0441) | (0.0439) | (0.0439) |
| Spouse | -0.180*** | -0.179*** | -0.171*** | -0.172*** | -0.173*** | -0.183*** | -0.185*** | -0.175*** | -0.175*** | -0.182*** |
| | (0.0443) | (0.0446) | (0.0437) | (0.0437) | (0.0437) | (0.0436) | (0.0437) | (0.0440) | (0.0436) | (0.0438) |
| **Marital status (Married = base case)** | | | | | | | | | | |
| Previously | -0.0881*** | -0.0834*** | -0.0793*** | -0.0781*** | -0.0779*** | -0.0815*** | -0.0782*** | -0.0783*** | -0.0844*** | -0.0821*** |
| married | (0.0287) | (0.0288) | (0.0285) | (0.0285) | (0.0285) | (0.0285) | (0.0284) | (0.0285) | (0.0286) | (0.0285) |
| Never been | -0.0658 | -0.0639 | -0.0530 | -0.0516 | -0.0509 | -0.0541 | -0.0624 | -0.0651 | -0.0562 | -0.0576 |
| married | (0.0474) | (0.0476) | (0.0472) | (0.0472) | (0.0472) | (0.0471) | (0.0468) | (0.0476) | (0.0474) | (0.0469) |
| **Level of highest education (No post-school education = base case)** | | | | | | | | | | |
| Bachelor degree | 0.000399 | -0.00421 | -0.00848 | -0.00849 | -0.00812 | -0.00151 | -0.00690 | -0.00648 | -0.00206 | -0.00982 |
| or higher | (0.0208) | (0.0208) | (0.0206) | (0.0206) | (0.0206) | (0.0206) | (0.0206) | (0.0207) | (0.0207) | (0.0206) |
| Other post-school | 0.0392* | 0.0375 | 0.0293 | 0.0317 | 0.0355 | 0.0364 | 0.0331 | 0.0239 | 0.0395* | 0.0328 |
| qualification | (0.0237) | (0.0237) | (0.0233) | (0.0234) | (0.0235) | (0.0234) | (0.0233) | (0.0234) | (0.0236) | (0.0233) |
| **Employment status ( Employed = base case)** | | | | | | | | | | |
| Unemployed | -0.0684 | -0.0683 | -0.0585 | -0.0563 | -0.0538 | -0.0504 | -0.0562 | -0.0861 | -0.0454 | -0.0569 |
| | (0.0698) | (0.0701) | (0.0684) | (0.0684) | (0.0683) | (0.0679) | (0.0681) | (0.0715) | (0.0709) | (0.0682) |
| Not in labour force | -0.100*** | -0.104*** | -0.109*** | -0.109*** | -0.110*** | -0.106*** | -0.107*** | -0.0975*** | -0.102*** | -0.105*** |
| | (0.0281) | (0.0282) | (0.0275) | (0.0274) | (0.0274) | (0.0274) | (0.0273) | (0.0274) | (0.0275) | (0.0273) |

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## Table B4 continued

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Country-of-origin characteristics:** | | | | | | | | | | |
| National Saving Rate | -0.00266*** | | | | | | | | | |
| | (0.00102) | | | | | | | | | |
| Average National Saving Rate | | -0.00262** | | | | | | | | |
| | | (0.00113) | | | | | | | | |
| Age Dependency Ratio | | | -0.000212 | | | | | | | |
| | | | (0.00122) | | | | | | | |
| Age Dependency Ratio (young) | | | | -0.000957 | | | | | | |
| | | | | (0.000756) | | | | | | |
| Age Dependency Ratio (old) | | | | | 0.00255** | | | | | |
| | | | | | (0.00129) | | | | | |
| GDP | | | | | | 0.0248*** | | | | |
| | | | | | | (0.00790) | | | | |
| English Speaking | | | | | | | 0.0658*** | | | |
| | | | | | | | (0.0181) | | | |
| Market Capitalisation | | | | | | | | 0.000403*** | | |
| | | | | | | | | (0.000127) | | |
| Workers' Remittances | | | | | | | | | -0.00665*** | |
| | | | | | | | | | (0.00245) | |
| Muslims | | | | | | | | | | -0.0858** |
| | | | | | | | | | | (0.0378) |
| Buddhists | | | | | | | | | | -0.0593 |
| | | | | | | | | | | (0.0409) |
| Chinese | | | | | | | | | | -0.0106 |
| Universists | | | | | | | | | | (0.0682) |
| Hindus | | | | | | | | | | -0.0521 |
| | | | | | | | | | | (0.0484) |
| Non-religious | | | | | | | | | | -0.103* |
| | | | | | | | | | | (0.0603) |
| Constant | -0.0537 | -0.0540 | -0.106 | -0.0575 | -0.121 | -0.0957 | -0.0893 | -0.0260 | -0.101 | -0.0509 |
| | (0.285) | (0.286) | (0.284) | (0.278) | (0.274) | (0.274) | (0.273) | (0.275) | (0.276) | (0.276) |
| Observations | 1466 | 1472 | 1496 | 1496 | 1496 | 1487 | 1499 | 1465 | 1469 | 1501 |
| Root MSE | 0.326 | 0.328 | 0.328 | 0.327 | 0.327 | 0.325 | 0.326 | 0.324 | 0.326 | 0.326 |
| R-squared | 0.133 | 0.131 | 0.131 | 0.131 | 0.132 | 0.135 | 0.136 | 0.133 | 0.135 | 0.135 |

**Notes:** In addition to the coefficients reported above, the regressions also include MSR controls, which are not reported due to low significance. **:** Sample is limited to immigrant respondents aged 36 or older who have non-missing data on country of origin with the household saving rates above -1.28 and below 0.79. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05.

# Appendix C Extra tables for Chapter 4

**Table C.1 Definition of variables: individual characteristics**

| Variable | Definition |
|---|---|
| Money remitted | Dummy variables which is equal to 1 if any money sent to relatives or friends overseas whether on regular or as occasional payments since immigrating to Australia/last interview, 0 - otherwise |
| Levels | Remitted amount expressed in levels. Ordered dependent variable: 1- none, nil; 2 -$1 to $8,000: 3 - $8,001 to $16,000; 4 - $16,001 to $25,000; 5 - $25,001 to $35,000; 6 - $35,001 to $50,000; 7 - $50,001 or more. |
| Amount of money | Amount of money sent to relatives or friends overseas since migrating/last interview, divided by 10,000 (includes midpoints assessments of the levels of the remitted amount recorded in first and second wave of LSIA1 and value of money rounded to the nearest thousand and divided by 10,000 in LSIA2) |
| Income | Household annual income expressed in levels. Ordered variable: 1- none, nil; 2 -$1 to $8,000 a year: 3 - $8,001 to $16,000 a year; 4 - $16,001 to $25,000 a year; 5 - $25,001 to $35,000 a year; 6 - $35,001 to $50,000 a year; 7 - $50,001 or more a year |
| Fin. assets arrived with | Total value of financial assets including funds, personal effects and capital equipment, arrived with to Australia, rounded to the nearest thousand and divided by 10,000 |
| Fin. assets transferred to AUS | Total value of financial assets including funds, personal effects and capital equipment, transferred by respondent or his/her partner to Australia since immigration (if interviewed in 2000) or last interview (if interviewed in 2001), rounded to the nearest thousand and divided by 10,000 |
| Fin. assets transferred from AUS | Total value of financial assets including funds, personal effects and capital equipment, transferred by respondent or his/her partner from Australia since immigration (if interviewed in 2000) or last interview (if interviewed in 2001), rounded to the nearest thousand and divided by 10,000 |
| Age | Age at the time of interview |
| Gender | Dummy variable which is equal to 1 for male respondent and 0 for female |
| No. of children | Number of resident children of school age or below |
| No. of persons | Number of persons in household |
| Plan to leave | Dummy variable which is equal to 1 if respondent is planning to leave Australia permanently and 0 otherwise |
| Marital status | Current marrital status. 3 dummy variables: married or de-facto (base case), previously married and never been married |

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**Table C.1 (continued)**

| Variable | Definition |
|---|---|
| Education | Highest education status achieved before migration. 3 dummy variables: no post-school qualification (base case), bachelor degree or higher and other post-school qualification |
| Employment | Current employment situation. 3 dummy variables: employed (base case), unemployed and not in labor force |
| Housing arrangements | Individuals' current housing situation. 3 dummy variables: own/currently paying off mortgage, rent/pay board/rent-buy scheme and live rent free |
| State | State of residence. 8 dummy variables: New South Wales (base case), Victoria, Queensland, South Australia, Weastern Australia, Tasmania, Northern Territory, Australian Capital Territory |
| Continent | Continent of the former country of residence. 5 dummy variables: Oceania excluding Australia (base case), Asia, Africa, North America, South America and Europe |
| Visa category | Major grouping of visa category. 5 dummy variables: skilled points tested Independent (base case), skilled points tested Sponsored, skilled Business Skills/Employer Nomination Scheme, Humanitarian and Family |
| Spouse | Dummy variable which is equal to 1 if individual have spouse living overseas, 0 – otherwise |
| Children | Dummy variable which is equal to 1 if individual have children living overseas, 0 – otherwise |
| Parents | Dummy variable which is equal to 1 if individual have parents living overseas, 0 – otherwise |
| Brothers and sisters | Dummy variable which is equal to 1 if individual have brothers and/or sisters living overseas, 0 – otherwise |

# Appendix D Extra tables for Chapter 5

**Table D.1 Definition of variables: individual characteristics (HILDA)**

| Variable | Definition |
|---|---|
| Life satisfaction | Ordered dependent variable measuring the level of individual's life satisfaction on a scale from 0 to 10: 0 – totally dissatisfied; 5 – neither satisfied nor dissatisfied; 10-totally satisfied |
| Financial prosperity | Ordered dependent variable measuring the self-assessed individual prosperity given current needs and financial responsibilities on a scale from 1 to 6: 1 – very poor; 2 – poor; 3-just getting along; 4 – reasonably comfortable, 5 – very comfortable; and 6 - prosperous |
| Financial satisfaction | Ordered dependent variable measuring the level of individual's satisfaction with his/her financial situation on a scale from 0 to 10: 0 – totally dissatisfied; 5 – neither satisfied nor dissatisfied; 10-totally satisfied |
| Inability to pay bills | Binary dependent variable: equals to1 if respondents answered 'yes' to any of the seven questions relating to 'inability to pay' in the previous year, and 0 otherwise. These questions reflect if the respondent was going through any of the following hardships: could not pay electricity, gas or telephone bills on time; could not pay mortgage/rent on time; pawned or sold something; went without meals; was unable to heat home; asked for financial help from friends or family; asked for help from welfare/community organization |
| Raising $2,000 | Ordered dependent variable measuring difficulty in raising $2,000 in an emergency: 1 - could easily raise $2,000; 2 – could raise $2,000, but it would involve some sacrifices; 3 – would have to do something drastic to raise $2,000; and 4 – could not raise $2,000 |
| Income | Ln(Financial year disposable income+1) |
| Wealth | Household Net Worth (Assets minus debts for the household)/10,000 |
| Age | Age as at 30 June 2002 for wave 2 (2006 for wave 6) |
| Gender (1 if male) | Dummy variable which is equal to 1 for male respondent and 0 for female |
| No. of children | Number of resident children less than 15 years old |
| No. of persons | Number of persons in household |
| Marital status | Current marrital status. 3 dummy variables: married or de-facto (base case), previously married and never been married |
| Education | Highest education status. 3 dummy variables: no post-school qualification (base case), bachelor degree or higher and other post-school qualification |

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**Table D.1 (continued)**

| Variable | Definition |
|---|---|
| Employment | Current employment situation. 3 dummy variables: employed (base case), unemployed and not in labor force |
| Housing arrangements | Individuals' current housing situation. 3 dummy variables: own/currently paying off mortgage, rent/pay board/rent-buy scheme and live rent free |
| MSR | Major Statistical Region of the dwelling. 13 dummy variables: Sydney (base case), balance of New South Wales, Melbourne, balance of Victoria, Brisbane, balance of Queensland, Adelaide, balance of South Australia, Perth, balance of Weastern Australia, Tasmania, Northern Territory, Australian Capital Territory |
| Continent | Continent of the country of birth. 5 dummy variables: Australia and Oceania (base case), Asia, Africa, North America, South America and Europe |
| Years in Australia | Number of years spent in Australia since arrival |
| Religion | 6 dummy variables measuring if a country has dominant one of the following six religious group: Christians (base case), Muslims, Buddhists, Chinese Universists, Hindus or non-religious group (source: World Christian Encyclopedia (2007) |

## Table D.2 Definition of variables: individual characteristics (LSIA)

| Variable | Definition |
|---|---|
| Life satisfaction | Ordered dependent variable measuring the level of individual's satisfaction with life in Australia on a scale from 1 to 5: 1 – very dissatisfied; 2 – dissatisfied; 3 – neither satisfied nor dissatisfied; 4 – satisfied; 5-very satisfied |
| Income | Ordered independent variable: 1- none, nil; 2 -$1 to $3,015 a year: 3 - $3,016 to $5,043 a year; 4 - $5,044 to $8,059 a year; 5 - $8,060 to $12,011 a year; 6 - $12,012 to $16,067 a year; 7 - $16,068 to $20,071 a year; 8 - $20,072 to $25,063 a year; 9 - $25,064 to $30,055 a year; 10 - $30,056 to $35,047 a year; 11 - $35,048 to $40,039 a year; 12 - $40,040 to $50,023 a year; 13 - $50,024 to $77,999 a year; 14 - $78,000 to $103,999 a year; 15 - $104,000 or more a year |
| Fin. assets arrived with | Total value of financial assets including funds, personal effects and capital equipment, arrived with to Australia, rounded to the nearest thousand and divided by 10,000 |
| Fin. assets transferred to AUS | Total value of financial assets including funds, personal effects and capital equipment, transferred by respondent or his/her partner to Australia since immigration (if interviewed in 2000) or last interview (if interviewed in 2001), rounded to the nearest thousand and divided by 10,000 |
| Fin. assets transferred from AUS | Total value of financial assets including funds, personal effects and capital equipment, transferred by respondent or his/her partner from Australia since immigration (if interviewed in 2000) or last interview (if interviewed in 2001), rounded to the nearest thousand and divided by 10,000 |
| Age | Age at the time of interview |
| Gender (1 if male) | Dummy variable which is equal to 1 for male respondent and 0 for female |
| No. of children | Number of resident children of school age or below |
| No. of persons | Number of persons in household |
| Marital status | Current marrital status. 3 dummy variables: married or de-facto (base case), previously married and never been married |
| Education | Highest education status. 3 dummy variables: no post-school qualification (base case), bachelor degree or higher and other post-school qualification |
| Employment | Current employment situation. 3 dummy variables: employed (base case), unemployed and not in labor force |
| Housing arrangements | Individuals' current housing situation. 3 dummy variables: own/currently paying off mortgage, rent/pay board/rent-buy scheme and live rent free |
| State | State of residence. 8 dummy variables: New South Wales (base case), Victoria, Queensland, South Australia, Weastern Australia, Tasmania, Northern Territory, Australian Capital Territory |
| Continent | Continent of the country of birth. 5 dummy variables: Australia and Oceania (base case), Asia, Africa, North America, South America and Europe |
| Religion | 6 dummy variables measuring if a country has dominant one of the following six religious group: Christians (base case), Muslims, Buddhists, Chinese Universists, Hindus or non-religious group (source: World Christian Encyclopedia (2007) |

**Table D.3 Distribution of HILDA household heads by continents of origin and dominant religion in the country of origin (combined data for 2002 and 2006)**

| | Dominant religion in the country of origin | | | | | | |
|---|---|---|---|---|---|---|---|
| **Continents** | Christianity | Islam | Buddhism | Chinese Universists | Hinduism | Not religious | **Total** |
| Asia | 93 (15.05%) | 177 (28.64%) | 168 (27.18%) | 57 (9.22%) | 71 (11.49%) | 52 (8.41%) | **618 100%** |
| Africa | 107 (64.07%) | 47 (28.14%) | 0 | 0 | 13 (7.78%) | 0 | **167 (100%)** |
| North America | 65 (100%) | 0 | 0 | 0 | 0 | 0 | **65 (100%)** |
| South America | 57 (100%) | 0 | 0 | 0 | 0 | 0 | **57 (100%)** |
| Europe | 1,755 (98.60%) | 7 (0.39%) | 0 | 0 | 0 | 18 (1.01%) | **1,780 (100%)** |
| Oceania | 404 (100%) | 0 | 0 | 0 | 0 | 0 | **404 (100%)** |
| **Total** | **2,481 (80.27%)** | **231 (7.47%)** | **168 (5.44%)** | **57 (1.84%)** | **84 (2.72%)** | **70 (2.26%)** | **3,091 (100%)** |

**Notes**: Results are based on the data from the HILDA survey. Sample is limited to immigrant households aged 15 or older.

**Table D.4 Factors affecting life satisfaction of immigrants to Australia when continents-of-origin are controlled for, LSIA (panel data for 2001-2002)**

| Variables | Life satisfaction | Variables | Life satisfaction |
|---|---|---|---|
| | | **Employment status(Employed=base case):** | |
| Income | 0.0435*** | Unemployed | -0.252*** |
| | (0.00577) | | (0.0687) |
| Fin. assets arrived with | 0.000112 | Not in labour force | -0.0516 |
| | (0.00133) | | (0.0485) |
| Fin. assets transferred to AUS | 0.00261 | **Housing arrangements (Own/Pay mortgage=base case):** | |
| | (0.00160) | Rent | -0.0470 |
| Fin. assets transferred from AUS | 0.00955 | | (0.0438) |
| | (0.0223) | Rent free | 0.0952 |
| Age | -0.0205*** | | (0.0596) |
| | (0.00743) | **Continents (Oceania=base case):** | |
| Age squared | 0.000269*** | Asia | -0.237*** |
| | (0.0000825) | | (0.0863) |
| Gender (1 if male) | 0.0111 | Africa | 0.00202 |
| | (0.0344) | | (0.0986) |
| No. of children | -0.0333 | North America | 0.0520 |
| | (0.0232) | | (0.110) |
| No. of persons | 0.000345 | South America | -0.0608 |
| | (0.0107) | | (0.125) |
| **Marital status (Married=base case):** | | Europe | -0.106 |
| Previously married | -0.0408 | | (0.0888) |
| | (0.0611) | | |
| Never been married | -0.102** | Year (=1 if 2001) | -0.00262 |
| | (0.0431) | | (0.0351) |
| **Level of highest education (No post-school qualification=base case):** | | | |
| Bachelor degree or higher | -0.122*** | | |
| | (0.0425) | Log likelihood | -5096 |
| Other post-school | -0.190*** | Pseudo R -squared | 0.0287 |
| qualification | (0.0400) | Observations | 5641 |

**Notes:** Results are based on the data from the LSIA survey. The dependent variable is life satisfaction. In addition to the coefficients reported above, the regressions also include Australian State of Residence controls, which are not reported due to low significance. Sample is limited to Primary Applicants for Australian Residency aged 15 or older who have non-missing data on country of origin. Standard errors are indicated in parentheses. *** indicates p<=0.01, ** indicates p<=0.05, * indicates p<=0.1.

**Table D.5 Distribution of Primary Applicants by continents of origin and dominant religion in the country of origin, LSIA (combined data for 2001-2002)**

| | Dominant religion in the country of origin | | | | | | |
|---|---|---|---|---|---|---|---|
| **Continents** | Christianity | Islam | Buddhism | Chinese Universists | Hinduism | Not religious | **Total** |
| Asia | 347 (12.69%) | 890 (32.55%)) | 506 (18.51%) | 219 (8.01%) | 237 (8.67%) | 535 (19.57%)) | **2,734 (100%)** |
| Africa | 335 (61.81%) | 202 (37.27%) | 0 | 0 | 5 (0.92%) | 0 | **542 (100%))** |
| North America | 285 (100%) | 0 | 0 | 0 | 0 | 0 | **285 (100%)** |
| South America | 153 (99.35%) | 0 | 0 | 0 | 1 (0.65%) | 0 | **154 (100%)** |
| Europe | 1,062 (80.95%) | 223 (17.00%) | 0 | 0 | 0 | 27 (2.06%) | **1,312 (100%)** |
| Oceania | 212 (100%) | 0 | 0 | 0 | 0 | 0 | **212 (100%)** |
| **Total** | **2,394 (45.70%)** | **1,315 (25.10%)** | **506 (9.66%)** | **219 (4.18%)** | **243 (4.64%)** | **562 (10.73%))** | **5,239 (100%)** |

**Notes**: Results are based on the data from the LSIA survey. Sample is limited to the Australian immigrants who were Primary Applicants for Australian Residency and who are aged 15 or older. $P(\chi^2 \geq 3000) = 0.00$ on 25 degrees of freedom.